Medium Speed Vehicle Petition (MSV)

To:
Administrator,
National Highway Traffic Safety Administration, (NHTSA)
U.S. Department of Transportation,
400 Seventh Street SW.,
Washington, DC 20590
USA

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From:
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Petition for Rulemaking

The petitioner requests that a new category of motor vehicles will be defined by NHTSA.

This proposed category would be in functionality above the current LSV (Low Speed Vehicle) category as defined by FMVSS #500, but would not incorporate all of the requirements for FMVSS that currently apply to Passenger Cars or Light Duty Trucks.

However this category would provide substantial increase of safety over existing Motorcycle category that covers two and three wheeled vehicles.

This new category, which we propose would be referred to as "**Medium-speed Vehicle**" (MSV), would also increase the level of required equipment now specified in FMVSS #500 for LSV.

It is proposed that this category would be formulated to permit currently produced European and Asian vehicles that confirm to EU (European Directive) and are defined as "quadricycles" to be Imported and marketed to consumers in USA.

It is believed that Harmonization of International rules for vehicle equipment and safety are valid objective for NHTSA.

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NHTSA defines the term ``low speed vehicle'' as follows:
    Low-speed vehicle (LSV) means a motor vehicle,
    (1) That is 4-wheeled,
    (2) Whose speed attainable in 1.6 km (1 mile) is more than 32
kilometers per hour (20 miles per hour) and not more than 40 kilometers
per hour (25 miles per hour) on a paved level surface, and
    (3) Whose GVWR is less than 1,361 kilograms (3,000 pounds).
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While agency has on at least one occasion adjusted its vehicle type definitions to allow a new class of vehicles (low speed vehicles) to come into being, it did so for vehicles that have very low speed capability and were expected to be operated in controlled environments, like gated communities, on roads with low posted speed limits. In addition, there were more substantial countervailing public interest arguments for permitting the LSV category.

In the final rule establishing the low speed vehicle category, the agency noted:

"This final rule responds to a growing public interest in using golf cars and other similar-sized, 4-wheeled vehicles to make short trips for shopping, social and recreational purposes primarily within retirement or other planned communities with golf courses. These passenger-carrying vehicles, although low-speed, offer a variety of advantages, including comparatively low-cost and energy-efficient mobility. Further, many of these vehicles are electric-powered. The use of these vehicles, instead of larger, gasoline-powered vehicles like passenger cars, provides quieter transportation that does not pollute the air of the communities in which they are operated."

Typical American prospective vehicle buyer, however perceives the LSV class of vehicles as "modified" golf-carts that are "street-legal" and typically envisions the "GEM" (Global Electric Motors) manufactured vehicles that were commercialized by Chrysler Corporation and their production continued under DaimlerChrysler ownership of GEM.

These typical Low Speed Vehicles are not equipped with, for example doors, bumpers, defrosters, and other typical automotive features and are generally suited only for operation in warm climates during favorable weather conditions.

Operation at night, during rain or snow, or during humid conditions (when windshields can fog up), can become relatively hazardous.

It can be argued that similar conditions adversely affect motorcycle riders, and that of course is true.

Motorcycle accidents as well as deaths in accidents in which motorcycles are involved have sharply increased in recent years, which is well documented by NHTSA.

In June 2006, NHTSA issued a report, Recent Trends in Fatal Motorcycle Crashes: An Update, which reported that since 1997, motorcycle rider fatalities have increased by 89 percent from 2,116 to 4,008 in 2004: ``The latest 2004 data show that motorcycle rider fatalities increased for the seventh year in a row since 1997.'' This report was subsequently updated on August 22,2006, when NHTSA issued a press release (NHTSA 07-06, Tuesday August 22, 2006) announcing that motorcycle fatalities rose 13 percent from 4,028 in 2004 to 4,553 in 2005, meaning that motorcycle rider fatalities have increased for the eighth year in a row since 1997. The press release provided the following additional information about motorcycle rider fatalities:

- In 2005, the annual number of motorcycle rider fatalities was 10.5 percent of all motor vehicle traffic crash fatalities for that year, compared to 5.0 percent in 1997.
- Motorcycle rider fatalities and motorcycle registrations have both been on the rise since 1997. However, in most of these years, the rate of increase in motorcycle rider fatalities has been higher than the rate of increase in motorcycle registration (as reflected in the rate increase).
- In 2005, motorcycle rider fatalities increased for every age group. The largest percentage increase was in the 50 and over age group, followed by the 20-29 and 30-39 age groups.

The trend in increase readership can be to some extend attributed to several factors:

1.) Motorcycles are permitted in several states to use HOV Lanes
2.) Motorcycles are less expensive to operate than automobiles
3.) Motorcycles have generally much better fuel economy than standard size vehicles

However the trend in increase of motorcycle related traffic fatalities especially in the older age group can be attributed to the fact that motorcycle operation even in good weather conditions requires far greater skill than operation of automobile.

The current availability of small cars in USA is very limited or non-existent, and the only small vehicle that is available through Independent Importers is the "SMART" two seater car.
Currently in 2008 typical automobile available to consumers in USA has top speed in excess of 100 MPH and features engine power in excess of 100 HP and has acceleration times well in excess of needs of any driver in Local City traffic.

We believe that the MSV category could replace the use of motorcycles for many commuters and thus move them to a safer transportation alternative, which however would be more cost effective than a full size automobile.

As per study by the **Texas Transportation Institute**;
Americans spent 4.2 billion hours stuck in traffic in 2005, equivalent to a week of downtime for every commuter. That caused drivers to buy an extra 2.9 billion gallons (10.9 billion L) of fuel.
Compared with 2004, motorists in 2005 spent 220 million more hours going nowhere and used an additional 140 million gallons (529 million L) of fuel to get there.

Traffic congestion cost the average motorist in 2005 about $710, compared with an inflation-adjusted $260 in 1982.

Motorists in Los Angeles, CA experienced the greatest gridlock, losing on average 72 hours and 57 gallons (215 L) of fuel over the course of a year.

San Francisco/Oakland, CA and Washington, DC followed, with 60 lost hours and 47 gallons (177 L) and 43 gallons (162 L) of wasted fuel, respectively.

Buffalo, NY motorists commuted with the greatest ease, losing only 11 hours and 7 gallons (26 L) of fuel on average in 2005.

Any conventional vehicle, no matter how well engineered has ZERO miles per gallon of fuel efficiency when standing still in traffic with engine and accessories operating. Needles to say this greatly and negatively impacts any engineering gains in vehicle efficiency and pollutant reduction. In many cases in real life vehicle operation there is both decrease in the actual miles per gallon that the operator experiences, as well as increase in vehicle per mile emissions.

The reduction in REAL life miles per gallon versus the vehicle rating as per existing test procedures was recently acknowledged by EPA by adjusting the vehicle MPG ratings to reflect more closely what consumers obtain in real vehicle daily operation.

As per research by GM for their "Volt" project, their claim is that over 78% of daily commuters travel less than 40 miles to and from work, school, etc.

GM however has designed to have the "Volt" highway capable of speeds in excess of 60 MPH. Volt's estimated GWVR is 4,200 pounds.

Any such "full function" vehicle of course needs to and should comply with All applicable FMVSS for automobiles. Large Corporation of course is fully capable of all the necessary financial and technical requirements for such FMVSS compliance.

However there is significant number of commuters in both small and large communities that never need to travel on highways, but object to the LSV limit of only 25-MPH.

"National Personal Transportation Survey" which was conducted periodically since 1969 and with most recent data from 1990 and 1995 surveys, indicates that 50% of vehicle owners travel 25 miles or less daily and approximately 80 % drive 50 miles or less on daily basis.

Reference to the survey is attached as well as graph from 1990 survey.

The data from 1995 survey and similar "2000 COMBINED NATIONWIDE PERSONAL TRANSPORTATION SURVEY AND THE AMERICAN TRAVEL SURVEY" as well as the "National Household Travel Survey, 2001: [United States]" suggests that there is very small variance from the data in the 1990 graph, and therefore it can be assumed that such daily personal driving patterns will be similar in 2008 and beyond.

Based on our in city research (by MIROX Corporation) and monitoring of driving habits in North Hollywood, California; San Jose, California and Las Vegas, Nevada we have found that typical "average" daily in city travel speeds are 16.7 to 22.4 MPH, so that theoretically even vehicle capable of only 25 MPH would flow with normal traffic. However LSV driven in the same city traffic conditions in North Hollywood, California averaged only 14 MPH over one year of use, while accumulating 3,400 miles. Therefore to some extend LSV does in normal daily use impede the normal traffic flow.

It is estimated that vehicle that would be capable of at least 30 MPH within 6 to 8 seconds from stand still, could effectively and safely keep up with typical in City traffic flow, and would not impede it.

Therefore the request for maximum sped limit for MSV of 35 MPH is based on this data and experience of use of LSV in City traffic conditions.

With the 25-MPH top speed limitation most LSV even on slight inclines can only reach top speeds of 18 to 22 MPH, which becomes too slow for normal traffic flow patterns.

The habits of millions of drivers in American cities are realistically impossible to change, and typical driver will accelerate to maximum allowed speed (or sometimes above it) only to wait for longer period at next intersection before traffic lights change from red to green. Such typical drivers perceive the 25-MPH limited LSV as impractical or impeding to traffic flow and therefore being more "dangerous" in mixed traffic operation.

Others who do not mind the 25-MPH limitation are however concerned by the apparent lack of basic safety equipment, like doors, bumpers or lighting equipment that would comply with FMVSS #108, for example.

Therefore based on marketing research done by MIROX Corporation since 1998 we believe that there is potential, but initially small market for vehicles with slightly higher maximum speed than 25 MPH, but which would have far more standard safety features than the minimums required by FMVSS #500, yet offer personal transportation at or below the cost of motorcycles, while at the same time provide better protection from elements than motorcycles can, and thus would be much more practical and safer to operate.

Since at least 50% of American drivers do not need vehicles that are highway capable for they daily commute, significant portion of them may elect to drive cost effective small light vehicle, especially in dense city traffic conditions.

Since it is envisioned that majority of such vehicles would be electrically powered. The benefits of such MSV are obvious and include:

1.) **Elimination of exhaust and evaporative emissions**
2.) **Reduction of dependence on foreign oil**
3.) **Increased vehicle operational efficiency**
(Electric power vehicles do not use energy while standing still in traffic, while internal combustion engines "idle" and thus burn fuel and generate pollutants and Carbon Dioxide)
4.) **Increased energy per mile efficiency**
(electric vehicles on energy equivalency to Gasoline range in 150 to 200 MPG / Gasoline contains 33,700 watt-hour of energy per one US gallon /)
5.) **Reduced cost per mile**
(Average cost of electric energy in USA in 2008 is $0.108 per Kw/h and thus light-weight MSV which uses 180 to 250 Watt-hours per mile of travel can be operated for about 2 to 3 cents per mile, by comparison Gasoline or Diesel fueled vehicle costs at least 10 times more per mile to operate.)

The National Environmental Policy Act

NHTSA also has obligation to consider any final rule under the National Environmental Policy Act and determine if it will have significant impact on the human environment.

Currently LSV usage is very small in comparison to that of motor vehicles as a whole; therefore, any change to the LSV segment does not have a significant environmental effect.

However the use of electrically powered MSV especially in City traffic in population dense areas could have very significant positive effect in the near future.

Based on our continuous research we estimate that the "TOTAL MARKET" for MSV in USA is about 200,000 vehicles. With possible annual sales of 10,000 vehicles initially growing to about 30,000 annually after few years. Since the desirability for MSV grows as cost of transportation and especially of petroleum fuel increases significantly in relation to cost of electric power, the "TOTAL MARKET" demand may in the future grow to as many as 500,000 units.

In Europe where majority of the "Quadricycles" are powered by diesel fueled engines the difference in operating cost when compared to conventional small vehicle is not as significant and is only perhaps one half the cost of driving a small car. The ease of parking and finding a parking space is the number one reason for Europeans purchasing vehicles in the "quadricycle" class or a small car like "SMART".

Relative Safety of "Quadricycles"

European experience especially in France has shown that the "quadricycle" class of vehicles was the safest from all vehicle classes, and their drivers had fewer accidents than average driver of conventional full size car.

Quadricycles were found to be even safer than mopeds or bicycles.

This is even when the fact that such vehicles can be operated in countries like France and Italy without any driver license and by individuals as young as 14 years of age.

Although we do not advocate that in USA any such "no license" or "young age" operations are permitted, as those anyway are responsibilities of individual states and their respective DMV's, it is however apparent that from European experience, the combination of 4 wheels, light weight and limited engine power, provides far greater public safety and above average reduction in fatal accidents than any equipment no matter how sophisticated that is mandated for conventional automobiles.

We propose that the classification would be based on or be similar to existing EU requirements for "quadricycles"

However to distinguish these vehicles intended for Urban use from "Quads" or four wheeled vehicles intended for off-road recreational use, we propose that this category would be defined as "MSV" or Medium Speed Vehicle.

Regulations related to "Quadricycles"

Following are the existing regulations in 27 European countries:

Based on EU directive:

1. A "quadricycle" is a vehicle with four wheels whose unladen mass is not more than 400kg, (550 kg for vehicles intended for carrying goods), (excluding batteries if it is an electric vehicle) and whose maximum continuous rated power does not exceed 15 kW.

2. The occupant protection is assessed by a frontal impact test where the vehicle is propelled into a deformable barrier (to simulate striking another vehicle) at a velocity of 56 km/h (~35 mph). The impact takes place at a 40% overlap with the barrier and is concentrated on the driver's side of the vehicle.

3. Construction standards for quadricycles are harmonized at European level, the main instrument being European Parliament and Council Directive 2002/24/EC - the Framework Directive. This Directive requires compliance with a number of individual Directives that set out requirements for particular vehicle systems; brakes, lighting, wheels, etc.
These harmonized requirements are recognized by all 27 Member States of the European Community and once the vehicle is approved to the standards of the Directive by any member state the manufacturer has access to all 27 markets.

For quadricycles, as opposed to passenger cars, there are no requirements for occupant protection tests. (Crash Tests)

This Directive shall also apply to quadricycles, i.e. motor vehicles with four wheels having the following characteristics:
(a) Light quadricycles whose unladen mass is not more than 350 kg (category L6e), not including the mass of the batteries in case of electric vehicles, whose maximum design speed is not more than 45 km/h, and
(i) Whose engine cylinder capacity does not exceed 50 cm3 for spark (positive) ignition engines, or
(ii) Whose maximum net power output does not exceed 4 kW in the case of other internal combustion engines, or
(iii) Whose maximum continuous rated power does not exceed 4 kW in the case of an electric motor.
These vehicles shall fulfil the technical requirements applicable to three-wheel mopeds of category L2e unless specified differently in any of the separate directives;

(b) Quadricycles, other than those referred to in (a), whose unladen mass is not more than 400 kg (category L7e) (550 kg for vehicles intended for carrying goods), not including the mass of batteries in the case of electric vehicles, and whose maximum net engine power does not exceed 15 kW. These vehicles shall be considered to be motor tricycles and shall fulfil the technical requirements applicable to motor tricycles of category L5e unless specified differently in any of the separate Directives.

Category L5e -
Motor Tricycle - Three wheels, symmetrically arranged with an internal combustion engine capacity greater than 50cm3 and/or a maximum speed greater than 45km/h.

Following regulations apply to the quoted L5e & L7e categories:

3.3. Components and Component Systems

If vehicle systems or components are type approved to any of the separate Directives listed under ECWVTA this will be accepted in place of any corresponding requirement in C&U or RVLR.
The following systems or parts must either be of an approved type or carry specific markings.
(a) **Ignition Suppression** on motorcycles first used on or after 1 April 1974 - must be approved to European Community Directive 72/245/EEC or to Chapter 8 of Directive 97/24/EC or to UN Economic Commission for Europe (ECE) Regulation 10;
(b) **Mirrors** optional fitment but if fitted on motorcycles first used on or after 1 October 1978 - must be approved to EC Directive 71/127, 79/795, 80/780, 85/205, 86/562, 88/321,Chapter 4 of Directive 97/24 or to ECE Regulation 46.01;
(c) **Lighting Equipment and Reflectors:**
(i) **Direction Indicators** - on motorcycles first used on or after 1 April 1986 must be approved to EC Directive 76/759, 93/92, Chapter 2 of 97/24 or to ECE Regulation 6 or 50;
(ii) **Stop Lamps and Front and Rear Position Lamps** - on motorcycles first used on or after 1 April 1986 must be approved to EC Directive 76/758, 93/92, Chapter 2 of 97/24 or ECE Regulation 7 or 50;
(iii) **Rear Reflectors** - on motorcycles first used before 1 April 1991 must comply with the requirements of British Standard AU 40. If first used after 1 April 1991 they must be approved to EC Directive 76/757, 93/92, Chapter 2 of 97/24 or to ECE Regulation 3;
(iv) **Rear Registration Plate Lamp** - on motorcycles first used on or after 1 April 1986 must be approved to EC Directive 76/760, 93/92 and Chapter 2 of 97/24 or to ECE Regulation 4 or 50;
(v) **Headlamps** - the regulations set minimum wattage requirements for dipped and main beam headlamps according to the cubic capacity of motorcycles. Headlamps on motorcycles are not required to have any approval markings, and
(vi) As a general condition the regulations require riders to keep obligatory lamps and reflectors clean and in good working order.
(d) **Exhausts** - on motorcycles first used on or after 1 January 1985 the silencer which forms part of the exhaust system must be either:
(i) that with which the machine was first fitted; or
(ii) clearly and indelibly marked with :-
-the relevant BS marking BS AU 193/T2, BS AU 193a, 1990/T2, BS AU 193a, 1990/T3; or
-the relevant "e" marking to show compliance with EC Directive 89/235; or the relevant "e" marking to show compliance with Chapter 9 of EC Directive 97/24; or
-the name or trade mark of the manufacturer or marked with that manufacturer's part number - relating to it.
The European Community noise limits applicable to new motorcycles first used from 1 April 1991 are:

Motorcycle Category by cm^3	Limits in dB(A)
Up to and including 80	77
Between 80 and 175 (incl.)	79
Above 175	82

Motorcycles approved to EU Directive 97/24/EC, Chapter 9 will be 2dB(A) less than the above figures.
(Note: the precise regulations for motorcycle exhausts are complex and it is recommended that they are studied closely to obtain accurate and complete details of the requirements).
Before buying any replacement parts for systems listed in this section, riders should check for the relevant marks, where applicable. These will include an "e" mark for EC Directives, an "E" mark for ECE Regulations and "BS" for British Standards.
(Note: amateur motorcycle builders may be exempt from some or all of the requirements)

3.4 Brakes

(a) ***Two Wheeled Motorcycles:***
Two wheeled motorcycles (with or without sidecar) and mopeds, first used on or after 1 April 1987*, are subject to C&U Regulations 16 (5) and (5a). These Regulations require compliance with either UNECE Regulation 78 (including the appropriate "E" marking on the vehicle) or EU Directive 93/14/EEC, this provides an easy method for checking the legality of use for a particular machine. Motorcycles first used before 1 April 1987 are subject to C&U Regulation 16 (4) and subsequently the requirements of Schedule 3.

(b) **Three Wheeled Motorcycles (Trikes) & Quadricycles**:
Three wheeled motorcycles with an engine capacity of less than 50cc if of the internal combustion engine type and a design speed of less than 30mph, first used on or after 1 April 1987*, are subject to C&U Regulations 16 (5) and (5a). These regulations require compliance with either UNECE Regulations 78 or EU Directive 93/14/EEC; including the appropriate "E" marking on the vehicle, this provides an easy method for checking the legality of use for a particular machine.
Other three wheeled motorcycles are subject to C&U regulation 16 (4)a and subsequently the requirements of Schedule 3.
**Amateur built motorcycles (i.e.: those not built as part of a commercial enterprise) and motorcycles first used before 1 April 1987, are not subject to C&U regulations 16 (5) or 16 (5a) but must comply with C&U regulation 16 (4) and the relevant parts of Schedule 3.*

3.5 Motor Cycle Data Plates

The following motorcycles must be fitted with a motorcycle data plate:
(a) Mopeds, if first used on or after 1 August 1977;
(b) Standard motorcycles not exceeding 150cm3, if first used between 1 August 1977 and 31 December 1981;
(c) Standard motorcycles not exceeding 125cm3, if first used on or after 1January 1982;
Details of the plate and information required are given in Regulation 69 and Schedule 9 of the Road Vehicles (C&U) Regulations 1986. If the machine's specification is changed (derestricted) then the plate must be amended and the Driver and Vehicle Licensing Agency (DVLA) at Swansea must be notified using the relevant section on the back of the vehicle registration document (V5). Alternatively the data plate may comply with Directive 93/94/EEC indicating that the vehicle is type approved in accordance with Directive 92/61/EEC. The data plate will have an 'e' number and details of the noise output in dB(A) at a specified engine speed.

3.6. Speedometers

Every motorcycle first used on or after 1 April 1984 and capable of more than 25 mph must have a speedometer, which reads in both miles per hour and kilometers per hour either simultaneously or separately by the use of a switch. A speedometer which is approved to Community Directives 75/443/EEC as amended by 97/39/EC, 2000/7/EC or to UNECE Regulation No.39 is acceptable.

In a view of the above existing European regulations, it is proposed that this new class of medium-speed vehicles specifically intended for in City or Urban operation would satisfy both the existing minimal standards under FMVSS #500 for LSV as well as all technically applicable "motorcycle" standards.

It is requested that the maximum top speed of such vehicle would be permitted to be 35 MPH, as such speed would be suitable for mixed in city traffic operation without providing any potential hazards that LSV limited to 25 MPH could.

To provide increased safety in City Traffic conditions, under all climatic conditions, at the minimum following FMVSS should be incorporated by reference, if the MSV contains any equipment or features for which FMVSS already exist.

571.101 Standard No. 101; Controls and displays
571.102 Standard No. 102; Transmission shift lever sequence, starter interlock, and transmission braking effect (If applicable)
571.103 Standard No. 103; Windshield defrosting and defogging systems
571.104 Standard No. 104; Windshield wiping and washing systems
571.105 Standard No. 105; Hydraulic and electric brake systems

571.106 Standard No. 106; Brake hoses
571.108 Standard No. 108; Lamps, reflective devices, and associated equipment
571.109 Standard No. 109; New Pneumatic Bias Ply and Certain Specialty Tires.
571.110 Standard No. 110; Tire selection and rims for motor vehicles with a GVWR of 4,536 kilograms (10,000 pounds) or less.
571.111 Standard No. 111; Rearview mirrors
571.113 Standard No. 113; Hood latch system (If applicable)
571.116 Standard No. 116; Motor vehicle brake fluids
571.118 Standard No. 118; Power-operated window, partition, and roof panel systems (If applicable)
571.124 Standard No. 124; Accelerator control systems
571.135 Standard No. 135; Light vehicle brake systems.
571.209 Standard No. 209; Seat belt assemblies
571.210 Standard No. 210; Seat belt assembly anchorages
571.139 Standard No. 139; New pneumatic tires for light vehicles.
571.201 Standard No. 201; Occupant protection in interior impact
571.202 Standard No. 202; Head restraints
571.203 Standard No. 203; Impact protection for the driver from the steering control system
571.204 Standard No. 204; Steering control rearward displacement
571.205 Standard No. 205, Glazing materials
571.206 Standard No. 206, Door locks and door retention components
571.207 Standard No. 207; Seating systems
571.209 Standard No. 209; Seat belt assemblies
571.210 Standard No. 210; Seat belt assembly anchorages
571.212 Standard No. 212; Windshield mounting
571.214 Standard No. 214; Side impact protection
571.216 Standard No. 216; Roof crush resistance-passenger cars
571.219 Standard No. 219; Windshield zone intrusion
571.225 Standard No. 225; Child restraint anchorage systems (If applicable)
571.301 Standard No. 301; Fuel system integrity (If applicable)
571.302 Standard No. 302; Flammability of interior materials
571.303 Standard No. 303: Fuel system integrity of compressed natural gas vehicle (If applicable)
571.304 Standard No. 304, Compressed Natural Gas Fuel Container Integrity (If applicable)
571.305 Standard No. 305; Electric-powered vehicles: electrolyte spillage and electrical shock protection
571.401 Standard No. 401; Internal trunk release. (If applicable)

However in order to make such medium-speed vehicle cost effective and attractive to potential consumers, following standards that are difficult and very expensive to comply with for low volume manufacturers, who are most likely to first introduce such vehicles into commerce in USA, that these standards should be made "optional".

571.138 Standard No. 138: Tire pressure monitoring systems

571.202a Standard No. 202; Head restraints; Mandatory applicability begins on September 1, 2008.

571.208 Standard No. 208; Occupant crash protection
Especially the sections of #208 standard that require Air Bags or "intelligent" advanced Air bags

It is also requested that the MSV vehicle class would require installation of a bumper systems both at the front and the rear of the vehicle that would confirm to a current standard, and that the bumpers would be capable of an impact at minimum 2.5 MPH, but 5 MPH preferable, considering that vehicles intended for in City traffic would be more susceptible to low speed collisions, than vehicles intended for highway travel.

It is however requested that the compliance or noncompliance with any specific FMVSS standard would be clearly disclosed to the potential consumer, so that the consumers are aware that such vehicles DO NOT offer the same level of safety or protection as conventional automobiles.

However the more difficult to attain FMVSS standards if they remain "optional" will promote safety competitiveness between prospective MSV manufacturers and will also allow consumers to make choice if they wish to pay for such additional safety features like advanced air bags, Tire Pressure Monitoring Systems, etc.

The issue of advanced air bags and their lack of availability to low volume manufacturers was in detail discussed in recent NHTSA approval of exemption for TESLA.

Currently it is technically possible to manufacture "quadricycle-like" micro-car but with only 3 wheels and therefore being by definition a "motorcycle".

California Vehicle Code already permits a 3-wheel vehicle that has unladed weight of 2,500 and which is electrically driven to have top speed of 45 MPH; while being classified as "motorcycle".
(California Vehicle Code - Definitions - 400 (a) & 400 (c))

Under Federal Regulations, however such vehicle would have almost no safety equipment, while at the same time have no speed or engine power limitations, thus in our opinion leading to production of inexpensive but dangerous in mixed traffic vehicle.

Therefore we believe that it is in best interest for the safety of the public to establish such a specific vehicle category that would define vehicles especially intended to travel within urban areas for limited distances. Also we believe that this category should apply both to 3-wheeled and 4-wheeled light-weight vehicles.

It is envisioned that just like majority of LSV are electric powered, that due to the extra expense with need to comply with emission regulations, this new category would be almost exclusively comprised of electrically powered vehicles.

Currently 30 to 50 miles travel range at 35 MPH or less in Urban areas is easily achievable with existing battery technology, with DC motors and electronic sold state controllers, while being cost competitive with conventional vehicles and meeting the proposed GVWR limits.

The obvious benefit would be the utilization of such ZEV vehicles in the urban areas where the reduction of internal combustion generated pollutants would be of the greatest benefit to the society as well as to the individuals.

Currently at least two separate States have already taken the initiative to define a Medium-Speed Vehicle Classification.

They are **Montana** and **Washington.**

Therefore it is already "legal" to operate such vehicles in those States. This however creates another "legal" conflict for Manufacturers and Importers as per Federal Regulations no such class exists and therefore it is technically "illegal" to Import such vehicles or offer them for sale in Interstate commerce.

Further the current definitions of MSV in the States that adopted such definition are essentially NEV with 35 MPH Speed Limit and no other safety feature than "roll cage" or "crush proof vehicle body".

While NHTSA does not in FMVSS specify the type of propulsion systems or specific technologies, the regulations of the above mentioned States actually specify "electric" power system for the MSV.

Basis for consideration of this Petition

In the 1998 final rule, which established the LSV definition, the agency noted that:
Under the preemption provisions of 49 U.S.C. 30103(b)(1), with respect to those areas of a motor vehicle's safety performance regulated by the Federal Government, any state and local safety standards addressing those areas must be identical. Thus, the state or local standard, if any, for vehicles classified as LSVs must be identical to Standard No. 500 in those areas covered by that standard. For example, since Standard No. 500 addresses the subject of the type of lights, which must be provided, state and local governments may not require additional types of lights. Further, since the agency has not specified performance requirements for any of the required lights, state and local governments may not do so either.
63 FR at 33215.

In a 1998 NPRM the agency revised this discussion by stating that:
We have re-examined our statements about preemption in the preamble of the final rule.
In those statements, we explained that, in view of our conscious decision not to adopt any performance requirements for most of the types of equipment required by Standard No.500, the states were preempted from doing so * * *. As a result of re-examining our views, we have concluded that we should not assert * * * preemption in this particular situation.
Accordingly, we agree that the states may adopt and apply their own performance requirements for required LSV lighting equipment, mirrors, and parking brakes until we have established performance requirements for those items of equipment.
However, the states remain precluded from adopting additional equipment requirements in areas covered by Standard No. 500.
65 FR 53219, 53220;

Considering that two states have already defined the MSV category using the LSV definition but by "requiring" additional equipment, in this case a "roll cage" or "crush proof body", while changing the LSV speed limit to 35 MPH, we believe that NHTSA has under the rules of preemption an obligation to consider this petition and provide a final rule that defines the MSV category, since no definition for it exists on the Federal Level.

Requested Definition:

"Medium-speed vehicle" means a self-propelled, four-wheeled or three-wheeled motor vehicle, equipped with a roll cage or crush-proof body design, whose speed attainable in one mile is more than thirty miles per hour but not more than thirty-five miles per hour on a paved level surface. Each Medium-speed vehicle shall at a minimum be equipped with following safety equipment that confirms to existing FMVSS and current applicable SAE standard.

(1) Headlamps as per FMVSS #108, (49 CFR 571.108).
(2) Front and rear turn signal lamps (SAE I), (49 CFR 571.108).
(3) Taillamps (SAE T) , (49 CFR 571.108).
(4) Stop lamps (SAE S), (49 CFR 571.108).
(5) Reflex reflectors: one red on each side as far to the rear as practicable, one amber on each side as far to the front as practicable and two red on the rear, (SAE A)
(5a) Side marker lights: one red on each side as far to the rear as practicable, one amber on each side as far to the front as practicable (SAE P)
(6) An exterior mirror mounted on the driver's side of the vehicle and either an exterior mirror mounted on the passenger's side of the vehicle or an interior mirror, (49 CFR 571.111)
(7) A parking brake, (49 CFR 571.135)
(8) A windshield of AS-1 or AS-5 composition, that conforms to the American National Standard Institute's "Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," Z-26.1-1977, January 28, 1977, as supplemented by Z26.1a, July 3, 1980 (49 CFR 571.205).
(9) A VIN that conforms to the requirements of part 565 Vehicle Identification Number , and
(10) A Type 1 or Type 2 seat belt assembly conforming to Sec. 571.209 , Federal Motor Vehicle Safety Standard No. 209, Seat belt assemblies, installed at each designated seating position, and whose mounting complies with 571.210 Standard No. 210; Seat belt assembly anchorages.
(11) Bumper system: both front and rear that conforms to Part 581, Bumper Standard
(12) Audible Warning Devices: Horn and Reverse Warning Beeper
(13) If the vehicle is electrically powered it shall confirm to 571.305 Standard No. 305; Electric-powered vehicles: electrolyte spillage and electrical shock protection
(14) Whose GVWR is less than 1,361 kilograms (3,000 pounds) if the vehicle is designed with substantial cargo carrying capacity i.e. vehicles intended for carrying goods, or 1,134 kilograms (2,500 pounds) if the vehicle is designed solely for transport of passengers.

Additionally if the Medium-speed vehicle contains any equipment that is referenced in any of the following FMVSS, such equipment or features shall confirm to all the requirements of the applicable FMVSS.

571.101 Standard No. 101; Controls and displays
571.102 Standard No. 102; Transmission shift lever sequence, starter interlock, and transmission braking effect (If applicable)
571.103 Standard No. 103; Windshield defrosting and defogging systems
571.104 Standard No. 104; Windshield wiping and washing systems
571.105 Standard No. 105; Hydraulic and electric brake systems
571.106 Standard No. 106; Brake hoses
571.108 Standard No. 108; Lamps, reflective devices, and associated equipment
571.109 Standard No. 109; New Pneumatic Bias Ply and Certain Specialty Tires.
571.110 Standard No. 110; Tire selection and rims for motor vehicles with a GVWR of 4,536 kilograms (10,000 pounds) or less.
571.111 Standard No. 111; Rearview mirrors
571.113 Standard No. 113; Hood latch system (If applicable)

571.116 Standard No. 116; Motor vehicle brake fluids
571.118 Standard No. 118; Power–operated window, partition, and roof panel systems (If applicable)
571.124 Standard No. 124; Accelerator control systems
571.135 Standard No. 135; Light vehicle brake systems.
571.209 Standard No. 209; Seat belt assemblies
571.210 Standard No. 210; Seat belt assembly anchorages
571.139 Standard No. 139; New pneumatic tires for light vehicles.
571.201 Standard No. 201; Occupant protection in interior impact
571.202 Standard No. 202; Head restraints
571.203 Standard No. 203; Impact protection for the driver from the steering control system
571.204 Standard No. 204; Steering control rearward displacement
571.205 Standard No. 205, Glazing materials
571.206 Standard No. 206, Door locks and door retention components
571.207 Standard No. 207; Seating systems
571.209 Standard No. 209; Seat belt assemblies
571.210 Standard No. 210; Seat belt assembly anchorages
571.212 Standard No. 212; Windshield mounting
571.214 Standard No. 214; Side impact protection
571.216 Standard No. 216; Roof crush resistance–passenger cars
571.219 Standard No. 219; Windshield zone intrusion
571.225 Standard No. 225; Child restraint anchorage systems (If applicable)
571.301 Standard No. 301; Fuel system integrity (If applicable)
571.302 Standard No. 302; Flammability of interior materials
571.303 Standard No. 303; Fuel system integrity of compressed natural gas vehicle (If applicable)
571.304 Standard No. 304, Compressed Natural Gas Fuel Container Integrity (If applicable)
571.305 Standard No. 305; Electric-powered vehicles: electrolyte spillage and electrical shock protection
571.401 Standard No. 401; Internal trunk release. (If applicable)

Specific Reasons for above requested definition:

1.) Inclusion of 3-wheeled vehicles

If the "medium-speed vehicle" definition is limited to 4-wheeled vehicles only, it would create a dangerous legal "loop-hole", since car like three-wheeled vehicles could be classified as "motorcycle" and thus be totally free of any safety equipment requirements.

One such vehicle is already marketed by ZAP in California. (http://www.zapworld.com/electric-vehicles/electric-cars/xebra-sedan)

For example even seat belts or windshield would not be required. Additionally such 3-wheeled motorcycles under current applicable regulations would not have any "speed limit" and thus pose serious safety hazard to the occupants as no safety features would be required by the current applicable regulations.

California Vehicle Code already contains a provision that allows an electrically powered 3-wheeled vehicle with unladen weight of 2,500 pounds to travel at 45 MPH, while being classified as "motorcycle".

2.) Inclusion of Bumper Standard

Since it is envisioned that majority of MSV would be operated in City traffic conditions a low-speed impacts both to the front and rear of the MSV are more likely. Energy absorbing Bumper systems not only protect the vehicle during impact but also reduce the impact generated load forces on properly belted occupants in the event of crash. Properly designed bumpers also tend to distribute the impact load in case of impact into other objects or vehicles and therefore reduce the potential damage.

3.) Incorporation of FMVSS #210

Number of currently available LVS have the seat belts attached to fiberglass or thin aluminum structures without significant reinforcements to the mounting points in the body structure. Such mounting would most likely fail in crash and would not provide significant safety protection to the belted occupants.
From the available documentation it is apparent that the initial reasoning for seat belt requirement by NHTSA in LSV was to retain the occupants in the "golf-cart" like vehicle during U-turn maneuver, or if the vehicle should overturn on its side. Since the golf-cart based LSVs did not have any doors or any other means to retain the occupants inside of the vehicle, however safety during a crash was apparently not considered.

4.) Incorporation of applicable FMVSS

While the FMVSS #500 specifies some minimal equipment, with the exception of FMVSS #209 and #205 none of the referenced equipment needs to comply with FMVSS. This opinion was expressed by NHTSA in a specific response to questions from New York State in relation to headlight system of GEM vehicles, which does not comply with FMVSS #108.

Vehicles that incorporate in their design such features as for example; doors or side glazing, which however do not confirm to any safety standard give to the occupants a false sense of security as such devices do not provide any protection for the occupants and in some instances can be more dangerous than if such features were not present.

Required compliance with FMVSS like those relating to tire, brake fluid, brake lines, etc. would provide incentive for MSV manufacturers to use existing automotive quality components and eliminate the economic incentive for use of cheaper sub-standard components that may result in additional safety hazards.

Since Tires, Brake Lines, Brake fluid and other components with DOT certification are widely available, such requirement should not pose any economic hardship for MSV manufacturers.

Since it is expected that initially majority of the MSV that would be made available to consumers in USA would be electrically powered with energy storage in a battery system, the FMVSS #305 should be referenced in the MSV definition.

5.) Inclusion of Audible Warning Devices:
Electrically powered vehicles are inherently much quieter especially at low speed operation, therefore additional danger exists to pedestrians and even pet animals as they do not perceive the vehicle as "moving" and thus the driver's ability to warn others is especially important. Currently many LSV do not have horn or any reverse travel audible warning device.
From our experience with electric powered vehicles we have found that such features are especially important as most people do not "look" for vehicles but rather perceive their approach by "sound" they emit.

6.) Dual Definition of GVWR
The EU directive that provides definition of quadricycle distinguishes between vehicles designed for cargo carrying and those for passenger use, and they are limited to vehicle unladen weight of 550 kg and 400 kg respectively. However the weight of batteries is not included in case of battery powered vehicles. Although this weight difference of 150 kg translates to 330 pounds, a 500-pound difference for the MSV should not be a problem. Since NHTSA has previously explained reasoning for limiting the GVWR rather than just the unladen weight in case of LSV the same reasoning can apply to MSV. However the 3,000 GVWR limit was increased from 2,500 pounds due to requests that "cargo carrying" vehicles to be useful need this GVWR limit in order to be practical, due to battery weight versus vehicle per charge range.

Since passenger LVS with fewer than 2,500 pounds GVWR were produced and marketed for several years before the limit was increased it proves that such GVWR is both achievable and practical.

Due to increased speed for MSV to 35 MPH, rather than 25 MPH for LSV, the impact forces in case of accidental crash will be greatly increased, those forces can be somewhat negated by reducing the GVWR to 2,500 pounds for passenger carrying vehicles and therefore increase the relative safety for the occupants.

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Las Vegas, NV 89146
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E-mail: mirox@aol.com

PS:
MIROX Corporation is Manufacturer's Agent of record with NHTSA as per Section 551.45 for following vehicle manufacturers:

ZMA (Zavodi Malolitraznich Automobilu) Naberezhnie Chelny (Russia)
KAZ (Kamsky Auto Zavod) Naberezhnie Chelny (Russia)
SEAZ (Serpuchovsky Autc Zavod) Serpuchov (Russia)

Attachments submitted with this Petition:

1.) Current European Regulations summary related to Quadricycles
2.) Reprint of ViaMichelin article about mini-cars (quadricycles)
3.) Reprint of the above article from Internet Web Browser (2 copies)
4.) Reprint of WARD's AutoWorld "Congestion Costs Everyone" (2 copies)
5.) Montana MSV Definition
6.) Washington Bill 1820
7.) SAFETY in MEDIUM SPEED VEHICLES
8.) California Vehicle Code Definitions related to "motorcycle"
9.) Reprint of Home page information from:
"National Personal Transportation Survey Series"
10.) Driving Habits Graph (Personal Vehicle Miles Driven Daily)
11.) Support Data based on Personal use of 2003 FORD FOCUS PZEV
12.) OKA Promotional summary page (LSV)
13.) Current production 2008 OKA NEV ZEV (LSV) Tri-fold (2 copies)
14.) OKA MPG reprint from www.okaauto.com web
15.) Greenberg Quinlan Rosner Research for X Prize (June 27,2006)
16.) Greenberg Quinlan Rosner Research for X Prize (August 1,2007)

Quadricycles

Since 1992, the Common Market has become an area without frontiers in which goods can be freely traded. The Council of the European Community has therefore enacted the design rules applicable to each type of vehicle marketed in all member countries.

Since June 17 2003 there was the introduction of another form of European Whole Vehicle Type Approval system (ECWVTA) to cover powered two and three-wheeled vehicles including two categories of small, low performance, four-wheel vehicles referred to as "**Quadricycles**".

Quadricycles are defined as follows:

- **Light quadricycles**

These quadricycles are vehicles which have an empty weight which is limited by the regulations to 350 kg (770 Lbs.), and are fitted with an engine of 4 kW (5.6 hp) and have a top speed of less than 45 km/h (28 MPH). They are similar to mopeds and can be driven with or without a license depending on the legislation in force in each European country.

Similar category exists in UK and is defined as follows:

Category L6e - Light quadricycle:
Four wheels, with a maximum unladen mass of 350kg (not including the mass of the batteries in an electrically powered vehicle), a maximum speed of 45km/h, a maximum spark ignition internal combustion engine capacity of 50cm3, or maximum power of any other internal combustion engine of 4kW or maximum electric motor continuous rated power of 4kW. The construction requirements are those for a three-wheel moped unless otherwise specified in a particular Directive.

This category is very similar to LSV (FMVSS #500), except that it includes power unit output limitation and slightly higher top speed of 45 km/h = 28 MPH (LSV is limited to 25 MPH or 40 km/h)

- **Heavy quadricycles**

These quadricycles are vehicles that have an empty weight which is limited by the regulations to 400 kg (880 Lbs.) for vehicles designed to carry passengers, or 550 kg (1,210 Lbs.) for the transport of goods, and have an engine which develops a maximum power of 15 kW (about 20 hp). They are related to tricycles and motorcycles.

Similar category exists in UK and is defined as follows:

Category L7e - Quadricycle:
- Four wheels, with a maximum unladen mass of 400kg or 550kg for a goods carrying vehicle (not including the mass of the batteries in an electrically powered vehicle) and a maximum net power, whatever the type of engine or motor, of 15kW. The construction requirements are those for a motor tricycle unless otherwise specified in a particular Directive.

This category or it's equivalent does not currently exist in USA or CANADA

For your information, the French terminology for these types of vehicle has changed. The vehicles that can be driven without a license which are called "VSP" or small cars are now known as **QLEM** (Light motorized Quadricycles).

The TQM (as motorized tricycles and quadricycles were previously called) are now called **QLOM** (heavy motorized quadricycles).

Four wheeled vehicles that fall outside the definitions given for quadricycles are considered to be cars and have to meet the appropriate regulations for cars.

How do minicars fare compared with ordinary cars?

By E. Tresmontant © *ViaMichelin*

With their can-like style and moped engine, minicars for long made people smile condescendingly. Today however they are seen as fully-fledged cars with good performance. They are appealing to the eye and also perfectly adapted to cities. More and more people are being won over to them in Europe.

What is a minicar "quadricycle"?

According to the European legislation in force, the license-free car must have: a maximum unladen weight of 350 kg, (770 Lbs.) a maximum speed of 45 km/h (28 MPH), and an engine with a maximum power of 4 kW (4.6 HP). Such cars are therefore likened to four-wheeled mopeds, which is why they are officially known as motor-powered light quadricycles'. Since 1997, the European Commission has recognized the social utility and lack of danger of these vehicles. It has also defined their production standards (safety belts, components, signaling, and brakes) and encouraged still hesitant Member States to open up their market.

Legislation on the driving of this type of vehicle differs however from one country to another:

In the **UK**, legislation from March 2001 states that any person who has passed the full motorcycle test before 1 March 2001 has automatic entitlement to drive a quadricycle. However, any person taking a full motorcycle test after this date is not entitled to drive such a vehicle on a motorcycle license.

In **France** you have to be over 16 to drive a license-free car and all youths born after 1 January 1988 must hold the BSR (*brevet de sécurité routière, option quadricycle léger*—road safety certificate, light quadricycle option).

In **Italy** and **Spain**, youths can drive this type of vehicle as soon as they are 14 but must pass a theoretical Highway Code test.

In **Germany**, a specific S license is required to drive minicars. A draft European regulation is being drafted.

300,000 minicars in Europe

Invented in France in the 1970s, the minicar has today become a European reality and its market is a promising sector given the fact there are some 80 million Europeans without a driving license! Today, 30,000 new vehicles are sold on average each year and the registration rate has increased by 25% in Europe since 1993 (the 10,000 registrations threshold was crossed in France in 2004). With second-hand cars, 300,000 minicars are today on the roads in Europe, including **140,000 in France**, **42,000 in Italy** and **39,000 in Spain**—the three main countries of growth.

While **Austria** and **Belgium** have become stable markets, **Germany**, **Great Britain** and **Russia** are poised to open their market in 2005. **Finland** and **Sweden**, and also, in the longer term, **Romania**, **Turkey** and **Hungary**, form developing markets.

A handful of producers

Thirty years after having launched the minicar concept, the main producers remain French for the most part.
Aixam has therefore been the market leader in Europe since 1987 with 40% of market shares and 14,000 units sold in 2004.
Microcar, a subsidiary of the group Bénéteau—world number one in the sailing boats sector—comes second with a 25% market share in France and 23% in Europe.
It is followed by **Simpa JDM**, **Ligier** and **Bellier**.
With a spectacular growth rate of 37.2% in 2003, the producer **Chatenet**, which presents itself as the upmarket minicar make, has managed to win over a clientele of young town dwellers, especially in Italy (in Rome and Milan) where the producer exports 70% of its production.
The other main producers are Italian (**Tasso**, **Grecav**, **Casalini** and **Piaggio**, the European leader of motorised 2-wheelers), German (**ATW**) and Dutch (**VBI**).

Who are typical drivers of minicars?

The traditional market target for minicars are elderly people (70% are men aged over 50) living in rural areas and who need to drive short distances to compensate the disappearance of public transport. Many women driving-license holders, who have never driven, also buy minicars after the death of their husband, to be independent.
The aging of the European population therefore largely explains the development of this market.

Also, owing to their small size (2.80 m long), ease of use, low consumption and maximum speed (45 km/h), minicars also make excellent urban vehicles. They are therefore appealing to an increasing number of 16 to 18 year olds (especially in **Italy** and **Spain**). Many parents judge scooters and motorbikes too dangerous, and now encourage their children to choose a minicar. These now have an increasingly dynamic and sleek design like the Barooder by Chatenet . Minicars also represent a good introduction to driving, allowing youths to become aware of the risks entailed and of the fact that there is no need to drive faster in towns.

Magazine - 01/04/05

On the road

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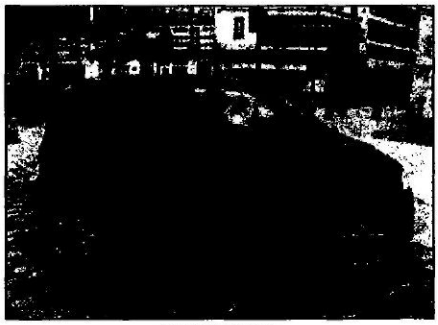

© *ViaMichelin*
The Chatenet Barooder

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© Microcar
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We have test driven the Microcar MC1, and the Chatenet Barooder and Speedino

These three models are typical of the development of minicars in recent years. Their easy driving (automatic gearbox) helps you get used to the basics of driving and feel real pleasure... What's more, with their level of comfort, pleasing appearance and sleek design, minicars now have the big-car look!

The Microcar MC1

Equipped with a 3000 rpm 505 cc Lombardini twin cylinder diesel engine, the new Microcar MC1 with its very strong aluminium chassis reaches 45 km/h with relatively good acoustical comfort. Its external lines are fluid and harmonious and its cabin spacious. The individual seats can be adjusted and provide good back support. The equipment is upmarket (remote control electric windows, central locking, laser CD player/car radio, parking aid, antifog headlamps, possibility of a transparent roof) and the dashboard with a digital meter compares favourably with that of a conventional car. The MC1 is easy to drive and offers good visibility. The boot volume (800 litres) allows you to go shopping or fishing at week-end! Above all, the MCI boasts a passenger protection system unique to the minicar market with a shock absorbing engine frame (reducing 5 times the violence of impact at 45km/h), seat belt force limiters (decreasing risks of injury to the head and chest) and a driver's airbag. A fully-fledged small city car!

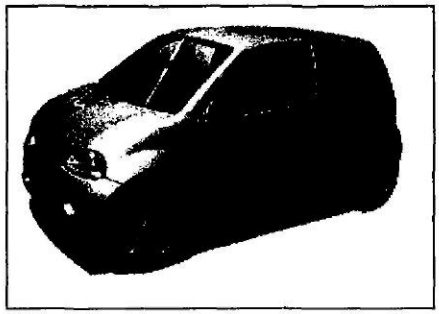
© Microcar

Technical characteristics of the MC1 Preference

Engine: Lombardini / four-stroke / diesel
Cylinder capacity: 505 cc
Maximum power: 4 kW / 5.4 HP at 3,000 rpm
Transmission: front-wheel drive / automatic variable-speed drive unit / power shift gear / ball-bearing homokinetic transmission
Dimensions (L/W/H in mm): 2788 / 1493 / 1420
Wheel base (in mm): 1797
Tyres: Michelin 145 / 60R 16 65 T
Boot volume: 800 litres
Retail price: 10 000 €
Internet site: http://www.microcar.com/

The Chatenet Barooder

Launched in 2003, this minicar is the biggest in the market in its category: length 2950 mm, width 1555 mm, height 1450 mm.
With a cool and powerful-looking design, it is the flagship vehicle of a producer who has striven for the past 25 years to win over a young public wishing to acquire a first experience of driving without taking any risks. Its 505 cc injection diesel engine boasts a maximum power of 4 kW (20.4 HP) without excessive noise. The ground clearance is high and the platform is in electro-zinc plated steel; the front brakes are fitted with a 212 mm diameter disc and the vehicle also features a hydraulic brake limiter on the rear wheels. The tyres are Michelin and the suspension boasts double effect shock absorbers with helicoidal springs. In short, fine mechanics! The Barooder comes in three versions (B2, S2 and X2), the upmarket model being fitted with a remote-control window opening and closing system, a precious reversing camera helpful in parking, a CD player/car radio and anti-fog headlamps (important in the country).



© Chatenet

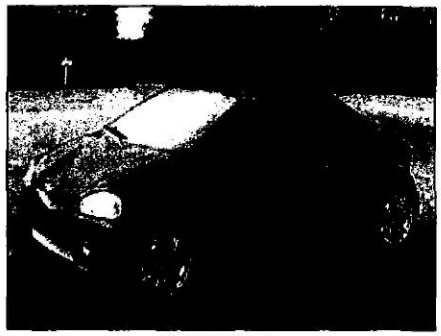
Technical characteristics of the Barooder

Engine: injection diesel
Cylinder capacity: 505 cc
Maximum power: 4 kW (5.4 HP)
Maximum engine speed: 3600 rpm
Gearbox: automatic
Tyres: MICHELIN compact 145 / 70 R13
Maximum speed: 110 km / h

Dimensions (L/W/H in mm): 2950, 1555, 1450.
Wheel base: 2070 mm
Boot volume: 1100 l
Retail price: 11,615.00 €
Internet site: www.automobiles-chatenet.com/

The Chatenet Speedino: a charming convertible

A real little bomb in its category, the Chatenet Speedino convertible is fitted with a 20 HP injection petrol engine capable of 100 km/h. For this reason, this more powerful model requires the B1 license. The pleasure of driving is optimal and, with its highly aerodynamic mini roadster' external design, this less than 3 m long minicar is an ideal partner for seaside holidays. With a 20 litre petrol tank, it can travel up to 400 km without refuelling. Turning to its safety, the Speedino features highly satisfactory equipment with its composite monohull structure, its double-sided electro-zinc plated steel chassis, its front disc brakes, its belt winders and its Securit windows. The Speedino is currently highly successful in Italy where it is seen as a chic intermediate between a scooter and a conventional car.



Technical characteristics of the Speedino

Engine: injection petrol
Cylinder capacity: 523 cc
Maximum power: 15kW (20.4 HP)
Maximum engine speed: 5000 rpm
Gearbox: automatic
Tyres: MICHELIN compact 145 / 60 R13
Maximum speed: 110 km / h
Dimensions (L/W/H in mm): 2950, 1555, 1250.
Wheel base: 2060 mm
Boot volume: 356 l
Retail price: 14,990.00 €
Internet site: www.automobiles-chatenet.com/

Further information

http://www.aixam.com/(not yet available in English)
http://www.ligier-automobiles.com/
http://www.bellier.fr/
http://www.simpa-jdm.com/

Created in 1996, AFQUAD is the European association of producers and importers of license-free cars.
http://www.afquad.com/

WARD'S AutoWorld

Congestion Costs Everyone

By James M. Amend
Ward's AutoWorld, Oct 1, 2007 12:00 PM

TRAFFIC CONGESTION WORSENED IN URBAN areas across America in 2005, costing motorists about $78 billion, or $5 billion more than in 2004, a new study finds.

The news could put more pressure on auto makers battling proposals for strict fuel-economy standards.

The study by the Texas Transportation Institute says Americans spent 4.2 billion hours stuck in traffic in 2005, equivalent to a week of downtime for every commuter. That caused drivers to buy an extra 2.9 billion gallons (10.9 billion L) of fuel.

Compared with 2004, motorists in 2005 spent 220 million more hours going nowhere and used an additional 140 million gallons (529 million L) of fuel to get there.

To boil it down further, traffic congestion cost the average motorist in 2005 about $710, compared with an inflation-adjusted $260 in 1982.

Motorists in Los Angeles experienced the greatest gridlock, losing on average 72 hours and 57 gallons (215 L) of fuel over the course of a year.

San Francisco/Oakland and Washington followed, with 60 lost hours and 47 gallons (177 L) and 43 gallons (162 L) of wasted fuel, respectively.

Buffalo motorists commuted with the greatest ease, losing only 11 hours and 7 gallons (26 L) of fuel on average in 2005.

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Montana Incentives and Laws

Medium-Speed Electric Vehicle Access to Roadways

A medium-speed electric vehicle, which has a maximum speed of 35 miles per hour (mph) and is in compliance with Title 49 of the Code of Federal Regulations, part 565, may only be operated on a highway for which the posted speed limit does not exceed 45 mph. A medium-speed electric vehicle must be treated as a light vehicle for purposes of titling and registration. (Reference Senate Bill 185, 2007, and Montana Annotated Code 61-1-101)

MSV – Montana Code

61-1-101. Definitions. As used in this title, unless the context indicates otherwise, the following definitions apply:

(31) (a) "Medium-speed electric vehicle" is a motor vehicle, upon or by which a person may be transported, that:
(i) has a maximum speed of 35 miles an hour as certified by the manufacturer;
(ii) is propelled by its own power, using an electric motor or other device that transforms stored electrical energy into the motion of the vehicle;
(iii) stores electricity in batteries, ultracapacitors, or similar devices, which are charged from the power grid or from renewable electrical energy sources;
(iv) is fully enclosed and includes at least one door for entry;
(v) has a wheelbase of 40 inches or greater and a wheel diameter of 10 inches or greater;
(vi) exhibits a manufacturer's compliance with 49 CFR, part 565, or displays a 17-character vehicle identification number as provided in 49 CFR, part 565;
(vii) bears a sticker, affixed by the manufacturer or dealer, on the left side of the rear window that indicates the vehicle's maximum speed rating; and
(viii) as certified by the manufacturer, is equipped as provided in 61-9-432.
(b) A medium-speed electric vehicle must be treated as a light vehicle for purposes of titling and registration under Title 61, chapter 3.

61-9-432. Medium-speed electric vehicles -- required equipment. A medium-speed electric vehicle, as defined in 61-1-101, must be equipped with:
(1) headlamps, front and rear turn signal lamps, taillamps, and stop lamps;
(2) three red reflectors, two of which must be placed on each side as far to the rear of the vehicle as practicable, and one of which must be placed on the rear of the vehicle;
(3) an exterior mirror mounted on the driver's side of the vehicle and either an exterior mirror mounted on the passenger's side of the vehicle or an interior mirror;
(4) a parking brake;
(5) a windshield that conforms to the federal motor vehicle safety standard provided in 49 CFR 571.205;
(6) a seatbelt assembly that conforms to the federal motor vehicle safety standard provided in 49 CFR 571.209; and
(7) a roll bar, roll cage, or crush-proof body design.

History: En. Sec. 3, Ch. 233, L. 2007.

CERTIFICATION OF ENROLLMENT

HOUSE BILL 1820

60th Legislature
2007 Regular Session

Passed by the House March 7, 2007
Yeas 94 Nays 0

Speaker of the House of Representatives

Passed by the Senate April 13, 2007
Yeas 47 Nays 0

President of the Senate

Approved

Governor of the State of Washington

CERTIFICATE

I, Richard Nafziger, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **HOUSE BILL 1820** as passed by the House of Representatives and the Senate on the dates hereon set forth.

Chief Clerk

FILED

Secretary of State
State of Washington

HOUSE BILL 1820

Passed Legislature - 2007 Regular Session

State of Washington 60th Legislature 2007 Regular Session

By Representatives Dickerson, Hankins, Lovick, B. Sullivan, Simpson, Hasegawa and Moeller

Read first time 01/29/2007. Referred to Committee on Transportation.

AN ACT Relating to reducing air pollution through the licensing and use of medium-speed electric vehicles; amending RCW 46.61.688; reenacting and amending RCW 46.04.320 and 46.61.687; adding a new section to chapter 46.04 RCW; adding a new section to chapter 46.61 RCW; prescribing penalties; and providing an effective date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

Sec. 1. RCW 46.04.320 and 2003 c 353 s 1 and 2003 c 141 s 2 are each reenacted and amended to read as follows:

"Motor vehicle" means every vehicle that is self-propelled and every vehicle that is propelled by electric power obtained from overhead trolley wires, but not operated upon rails. "Motor vehicle" includes a neighborhood electric vehicle as defined in RCW 46.04.357. <u>"Motor vehicle" includes a medium-speed electric vehicle as defined in section 2 of this act.</u> An electric personal assistive mobility device is not considered a motor vehicle. A power wheelchair is not considered a motor vehicle.

<u>NEW SECTION.</u> **Sec. 2.** A new section is added to chapter 46.04 RCW to read as follows:

"Medium-speed electric vehicle" means a self-propelled, electrically powered four-wheeled motor vehicle, equipped with a roll cage or crush-proof body design, whose speed attainable in one mile is more than thirty miles per hour but not more than thirty-five miles per hour and otherwise meets or exceeds the federal regulations set forth in 49 C.F.R. Sec. 571.500.

NEW SECTION. **Sec. 3.** A new section is added to chapter 46.61 RCW to read as follows:

(1) Except as provided in subsection (3) of this section, a person may operate a medium-speed electric vehicle upon a highway of this state having a speed limit of thirty-five miles per hour or less if:

(a) The person does not operate a medium-speed electric vehicle upon state highways that are listed in chapter 47.17 RCW;

(b) The person does not operate a medium-speed electric vehicle upon a highway of this state without first having obtained and having in full force and effect a current and proper vehicle license and display vehicle license number plates in compliance with chapter 46.16 RCW;

(c) The person does not operate a medium-speed electric vehicle upon a highway of this state without first obtaining a valid driver's license issued to Washington residents in compliance with chapter 46.20 RCW;

(d) The person does not operate a medium-speed electric vehicle subject to registration under chapter 46.16 RCW on a highway of this state unless the person is insured under a motor vehicle liability policy in compliance with chapter 46.30 RCW; and

(e) The person operating a medium-speed electric vehicle does not cross a roadway with a speed limit in excess of thirty-five miles per hour, unless the crossing begins and ends on a roadway with a speed limit of thirty-five miles per hour or less and occurs at an intersection of approximately ninety degrees, except that the operator of a medium-speed electric vehicle must not cross an uncontrolled intersection of streets and highways that are part of the state highway system subject to Title 47 RCW unless that intersection has been authorized by local authorities under subsection (3) of this section.

(2) Any person who violates this section commits a traffic infraction.

(3) This section does not prevent local authorities, with respect to streets and highways under their jurisdiction and within the reasonable exercise of their police power, from regulating the operation of medium-speed electric vehicles on streets and highways under their jurisdiction by resolution or ordinance of the governing body, if the regulation is consistent with this title, except that:

(a) Local authorities may not authorize the operation of medium-speed electric vehicles on streets and highways that are part of the state highway system subject to Title 47 RCW;

(b) Local authorities may not prohibit the operation of medium-speed electric vehicles upon highways of this state having a speed limit of thirty-five miles per hour or less; and

(c) Local authorities may not establish requirements for the registration and licensing of medium-speed electric vehicles.

Sec. 4. RCW 46.61.687 and 2005 c 415 s 1 and 2005 c 132 s 1 are each reenacted and amended to read as follows:

(1) Whenever a child who is less than sixteen years of age is being transported in a motor vehicle that is in operation and that is required by RCW 46.37.510 to be equipped with a safety belt system in a passenger seating position, or is being transported in a neighborhood electric vehicle or medium-speed electric vehicle that is in operation, the driver of the vehicle shall keep the child properly restrained as follows:

(a) A child must be restrained in a child restraint system, if the passenger seating position equipped with a safety belt system allows sufficient space for installation, until the child is eight years old, unless the child is four feet nine inches or taller. The child restraint system must comply with standards of the United States department of transportation and must be secured in the vehicle in accordance with instructions of the vehicle manufacturer and the child restraint system manufacturer.

(b) A child who is eight years of age or older or four feet nine inches or taller shall be properly restrained with the motor vehicle's safety belt properly adjusted and fastened around the child's body or an appropriately fitting child restraint system.

(c) The driver of a vehicle transporting a child who is under

thirteen years old shall transport the child in the back seat positions in the vehicle where it is practical to do so.

(2) Enforcement of subsection (1) of this section is subject to a visual inspection by law enforcement to determine if the child restraint system in use is appropriate for the child's individual height, weight, and age. The visual inspection for usage of a child restraint system must ensure that the child restraint system is being used in accordance with the instruction of the vehicle and the child restraint system manufacturers. The driver of a vehicle transporting a child who is under thirteen years old shall transport the child in the back seat positions in the vehicle where it is practical to do so.

(3) A person violating subsection (1) of this section may be issued a notice of traffic infraction under chapter 46.63 RCW. If the person to whom the notice was issued presents proof of acquisition of an approved child passenger restraint system or a child booster seat, as appropriate, within seven days to the jurisdiction issuing the notice and the person has not previously had a violation of this section dismissed, the jurisdiction shall dismiss the notice of traffic infraction.

(4) Failure to comply with the requirements of this section shall not constitute negligence by a parent or legal guardian. Failure to use a child restraint system shall not be admissible as evidence of negligence in any civil action.

(5) This section does not apply to: (a) For hire vehicles, (b) vehicles designed to transport sixteen or less passengers, including the driver, operated by auto transportation companies, as defined in RCW 81.68.010, (c) vehicles providing customer shuttle service between parking, convention, and hotel facilities, and airport terminals, and (d) school buses.

(6) As used in this section, "child restraint system" means a child passenger restraint system that meets the Federal Motor Vehicle Safety Standards set forth in 49 C.F.R. 571.213.

(7) The requirements of subsection (1) of this section do not apply in any seating position where there is only a lap belt available and the child weighs more than forty pounds.

(8)(a) Except as provided in (b) of this subsection, a person who has a current national certification as a child passenger safety technician and who in good faith provides inspection, adjustment, or

educational services regarding child passenger restraint systems is not liable for civil damages resulting from any act or omission in providing the services, other than acts or omissions constituting gross negligence or willful or wanton misconduct.

(b) The immunity provided in this subsection does not apply to a certified child passenger safety technician who is employed by a retailer of child passenger restraint systems and who, during his or her hours of employment and while being compensated, provides inspection, adjustment, or educational services regarding child passenger restraint systems.

Sec. 5. RCW 46.61.688 and 2003 c 353 s 4 are each amended to read as follows:

(1) For the purposes of this section, the term "motor vehicle" includes:

(a) "Buses," meaning motor vehicles with motive power, except trailers, designed to carry more than ten passengers;

(b) "Multipurpose passenger vehicles," meaning motor vehicles with motive power, except trailers, designed to carry ten persons or less that are constructed either on a truck chassis or with special features for occasional off-road operation;

(c) "Neighborhood electric vehicle," meaning a self-propelled, electrically powered four-wheeled motor vehicle whose speed attainable in one mile is more than twenty miles per hour and not more than twenty-five miles per hour and conforms to federal regulations under ((~~Title~~)) 49 C.F.R. ((~~Part~~)) Sec. 571.500;

(d) "Medium-speed electric vehicle" meaning a self-propelled, electrically powered four-wheeled motor vehicle, equipped with a roll cage or crush-proof body design, whose speed attainable in one mile is more than thirty miles per hour but not more than thirty-five miles per hour and otherwise meets or exceeds the federal regulations set forth in 49 C.F.R. Sec. 571.500;

(e) "Passenger cars," meaning motor vehicles with motive power, except multipurpose passenger vehicles, motorcycles, or trailers, designed for carrying ten passengers or less; and

((~~(e)~~)) (f) "Trucks," meaning motor vehicles with motive power, except trailers, designed primarily for the transportation of property.

(2) This section only applies to motor vehicles that meet the manual seat belt safety standards as set forth in federal motor vehicle safety standard 208 and to neighborhood electric vehicles and medium-speed electric vehicles. This section does not apply to a vehicle occupant for whom no safety belt is available when all designated seating positions as required by federal motor vehicle safety standard 208 are occupied.

(3) Every person sixteen years of age or older operating or riding in a motor vehicle shall wear the safety belt assembly in a properly adjusted and securely fastened manner.

(4) No person may operate a motor vehicle unless all child passengers under the age of sixteen years are either: (a) Wearing a safety belt assembly or (b) are securely fastened into an approved child restraint device.

(5) A person violating this section shall be issued a notice of traffic infraction under chapter 46.63 RCW. A finding that a person has committed a traffic infraction under this section shall be contained in the driver's abstract but shall not be available to insurance companies or employers.

(6) Failure to comply with the requirements of this section does not constitute negligence, nor may failure to wear a safety belt assembly be admissible as evidence of negligence in any civil action.

(7) This section does not apply to an operator or passenger who possesses written verification from a licensed physician that the operator or passenger is unable to wear a safety belt for physical or medical reasons.

(8) The state patrol may adopt rules exempting operators or occupants of farm vehicles, construction equipment, and vehicles that are required to make frequent stops from the requirement of wearing safety belts.

NEW SECTION. **Sec. 6.** This act takes effect August 1, 2007.

--- END ---

SAFETY IN MEDIUM SPEED VEHICLES
Prepared by Steve Mayeda, February 24, 2007

This new class of Medium Speed Vehicles will be safer than Neighborhood Electric Vehicles.
MSVs will have three point safety belts, roll bar, safety cage or unibody construction. The braking systems will be on all four wheels plus regenerative braking. MSVs have frontal crash protection with batteries and or the motor and drive train systems in the front unlike golf cars which are rear wheel drives and the batteries are under the seat.

How will the ten mile per hour difference affect MSVs?
For a driver or passenger the affects in a frontal crash would be nominal. The table below shows the affects for a typical 3300 lb sedan. An MSV at 1200 lbs would produce a smaller impact force.

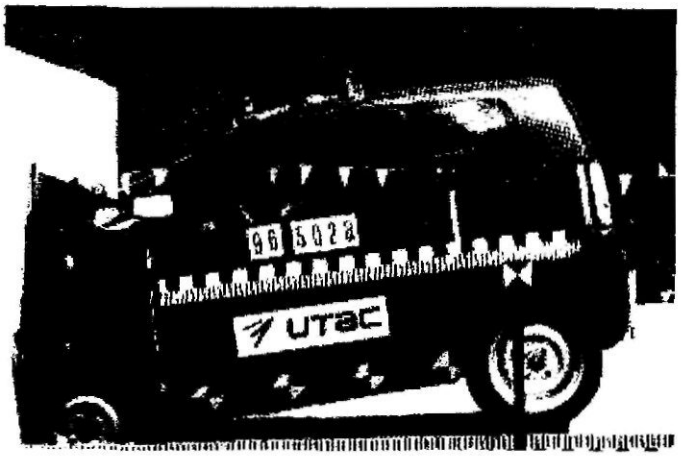
Weight of Driver	**Speed of Typical Sedan**	**Stopping Distance**	**Impact Force**
160 lbs	25 mph	1.0 feet	1.7 tons
160 lbs.	35 mph	1.5 feet	2.2 tons

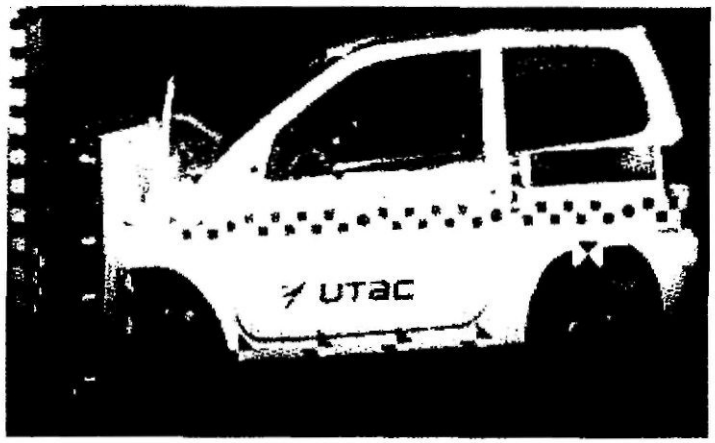
Is the car as safe as a typical sedan?
The table below shows the difference in impact force of a Toyota Camry and a typical MSV. At 25 mph a Toyota Camry (3300 pounds) in a frontal collision produces the impact force of 34.5 tons, while a MSV weighing 1200 pounds produces 36% of that force or 12.5 tons. If you increase the speed to 35 mph the MSVs impact force increases 3.9 tons while the Camry's force increases 12.6 tons. The additional force can cause more damage to property and people. MSVs are lighter and safer than larger cars . A typical sedan would require almost three times the force to stop compared to an MSV.

Vehicle Weight	**Vehicle Speed Stopping**	**Distance after impact**	**Impact Force**
3300 lbs (Toyota Camry)	25	1.0 feet	34.5 tons
1200 lbs MSV	25	1.0 feet	2.5 tons
3300 lbs (Toyota Camry)	35	1.5 feet	47.1 tons
1200 lbs MSV	35	1.5 feet	16.4 tons

A smaller car has less mass and can stop faster. A typical 'small auto' today weighs 2400 lbs. (Hyundai Accent) A MSV at 1200 pounds not shown on this table would stop even faster.

Miles Per Hour	**Distance to stop in feet** Small Auto	**Distance to stop in feet** Mid-Size Auto	**Distance to stop in feet** Large Auto	**Distance to stop in feet** Van or Pick Up
10	16	17	17	19
20	42	44	47	55
30	78	83	89	108





Above is the Micro Car crash tested in France.

References:

Dept of Physics and Astronomy, Georgia State University, Atlanta Georgia.
Timothy J. Long, Collision Research and Analysis, Accident Research and Biomechanics Inc.
Douglas Gabauer, Rowan University, Robert Thomson Chalmers University Sweden.
Texas Instruments Incorporated, TI-Navigator Systems
Hugo Marsolais, P. Eng. Director Engineering & Certification, Feel Good Cars Inc.

CALIFORNIA - Vehicle Code

Motorcycle
400. (a) A "motorcycle" is any motor vehicle having a seat or saddle for the use of the rider, designed to travel on not more than three wheels in contact with the ground, and weighing less than 1,500 pounds.

(b) A motor vehicle that has four wheels in contact with the ground, two of which are a functional part of a sidecar, is a motorcycle if the vehicle otherwise comes within the definition of subdivision (a).

(c) A motor vehicle that is electrically powered, has a maximum speed of 45 miles per hour, and weighs less than 2,500 pounds, is a motorcycle if the vehicle otherwise comes within the definition of subdivision (a).

(d) A farm tractor is not a motorcycle.

(e) A three-wheeled motor vehicle that otherwise meets the requirements of subdivision (a), has a partially or completely enclosed seating area for the driver and passenger, is used by local public agencies for the enforcement of parking control provisions, and is operated at slow speeds on public streets, is not a motorcycle. However, a motor vehicle described in this subdivision shall comply with the applicable sections of this code imposing equipment installation requirements on motorcycles.

Amended Ch. 972, Stats. 1992. Effective January 1, 1993.
Amended Ch. 594, Stats. 1993. Effective January 1, 1994.
Repealed Ch. 594, Stats. 1993. Effective January 1, 1994. Operative January 1, 1997.
Amended Ch. 675, Stats. 1994. Effective January 1, 1995.
Repealed Ch. 675, Stats. 1994. Effective January 1, 1995. Operative January 1, 1997.
Repealed Sec. 2, 3, and added Sec 4, Ch. 453, Stats. 1996. Effective January 1, 1997.

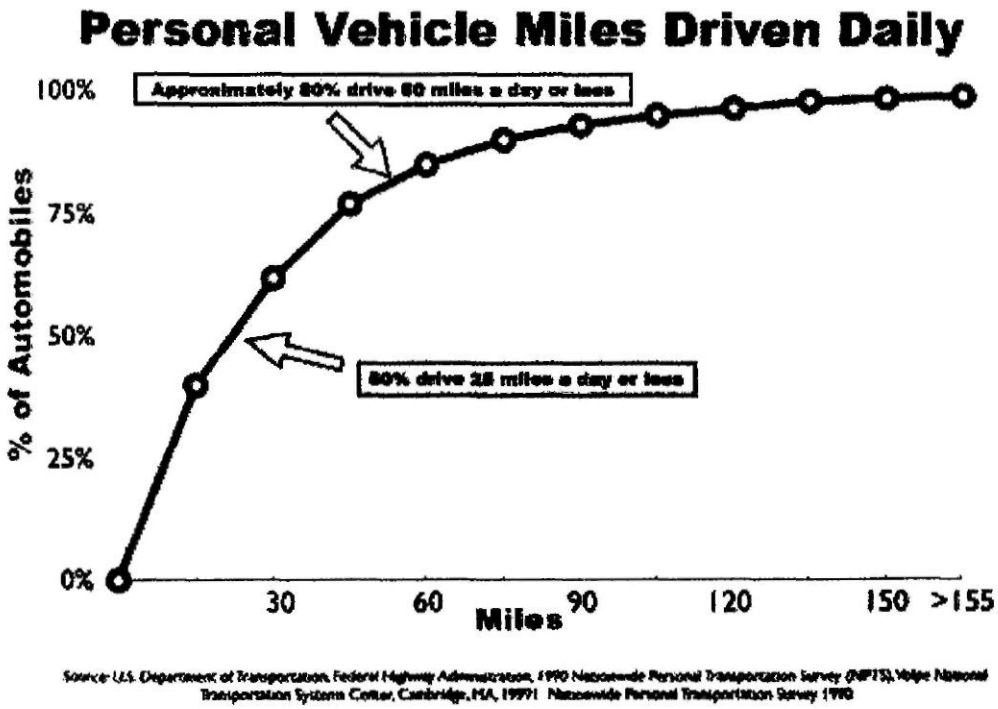
- Description
- View Studies in the Series
- Related Literature

Nationwide Personal Transportation Survey Series

If you wish, you can request to be notified via email if there are any new releases in this series, or updates to the datasets within this series. You can also choose to unsubscribe from series notifications.

Summary: The Nationwide Personal Transportation Survey (NPTS), sponsored by the United States Department of Transportation, Federal Highway Administration, has been conducted periodically since 1969. Its stated purpose is to record an inventory of daily personal travel for individuals 5 years of age and older. Data for the 1969, 1977, and 1983 studies were collected by way of an in-home interview with respondents selected using a multistate probability sample of housing units. All states and the District of Columbia were included in the sample. Starting in 1990, data were collected using computer-assisted telephone interviewing (CATI) technology with random-digit dialing sampling procedures. The 1969 survey elicited vehicle information on cars only, but subsequent waves also included personal trucks and vans, camper vehicles, motorcycles, and other vehicle types. The 1995 survey instituted changes in methodology that had a significant impact on the data, including data collection via a one-day travel diary and the use of a household trip roster. For this reason, analysts should not compare 1995 data directly with data from prior survey years. Major topical areas covered by this series include household data and demographic data, and information on household motor vehicles, the availability and usage of public transportation, household drivers, information on all trips taken in a 24-hour period, regardless of length, and on all trips taken during a 14-day period of 75 miles or more one-way, and information on the geographic area of the household and its members' workplaces. Potential uses of these data include uncovering travel trends over time, connecting travel behavior to traveler demographics and examining their relation over time, and assisting in the urban transportation planning process.

driving_habits_graph.jpg



Source: U.S. Department of Transportation, Federal Highway Administration, 1990 Nationwide Personal Transportation Survey (NPTS), Volpe National Transportation Systems Center, Cambridge, MA, 1990 Nationwide Personal Transportation Survey 1990

Support Data for MSV Petition.

The original **Ford Model T** with Gasoline fueled engine producing 20 hp (15 kW) for a maximum **top speed** of 45 MPH (72 km/h) got about 28.5 miles per gallon.

That's twice the fuel efficiency of a mid-sized SUV today!

The "quadricycle" category in EU specifications that has been adopted by 27 countries limits the peak engine power also to just 15 kW (about 20 Hp). And this is quite adequate for urban traffic conditions.

Most vehicles available today to consumers in USA will easily exceed 100 MPH, and have engines that have hundreds of horsepower MORE than they need for normal driving!

Typical MAXIMUM Speed limits in USA are 75 MPH on Major Highways and Interstates, 55 MPH on most Local Highways, 35 to 45 MPH on Major City Streets and 25 MPH or LESS on Neighborhood Roads.

Do we really need such FAST & POWERFUL vehicles in daily driving?

Here is REAL LIFE experience with **2003 FORD Focus ZX5 PZEV 2.3L** driven mostly in Los Angeles area for in City Driving and on few Los Angeles to Las Vegas long distance trips.

VIN# 3FAFP37Z63R149809
Owner since new: Star Irvine, 10813 Otsego St. N Hollywood CA 91601-3930
Vehicle use data acquired via OBDII port into data acquisition device by MIROX Corporation.

TOTAL MILES DRIVEN 53,000 in 2,185 hours that is an average of ONLY 24.25 MPH !

If the high speed drives are not considered, then

Vehicle was driven for 1,141 days, that is average of 40 miles per day at average speed of LESS than 25 MPH !

Here is the ACTUAL Vehicle use SUMMARY shown in the Table below:

Trip Type Description		Distance Traveled Miles	Elapsed Time Hours	Average MPH	Percent Of TOTAL Time	Percent Of TOTAL Miles
Very Short Trips *	under 5 miles Round Trip	9,011	467	*19.29*	21.3%	17%
Short Trips **	under 20 miles Round trip	36,680	1579	*23.22*	72.2%	73%
In City Freeway Driving		4,127	90	*45.85*	4.1%	4%
Long Distance Driving	over 200 miles per trip	3,182	49	*64.93*	2.2%	6%
TOTAL		**53,000**	**2,185**	**24.25**		**100%**

*) **Very Short Trips** this category can be easily replaced with the use of LSV as per FMVSS #500
) **Short trips this category which accounts for 72 to 73% of vehicle use could be replaced by MSV, if such vehicles would be available to consumers in USA.

Because both the "very short trips" and "short trips" could be replaced with MSV use, in total about 83% to 90% of typical vehicle use could be done in MSV.

Additionally if such vehicle is electrically powered, and therefore cold starts which account for majority of vehicle emissions would be totally eliminated, the emissions generated by even a PZEV (Partial-Zero Emission Vehicle) can be reduced by as much as 98%.

ZEV

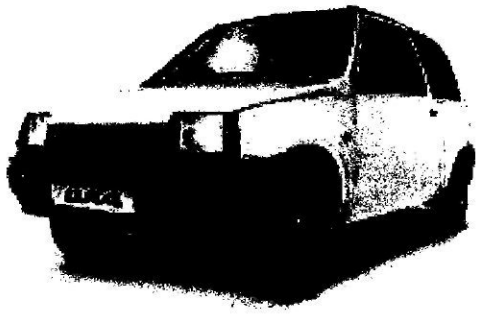
Zero Emission Vehicle

NEV

Neighborhood Electric Vehicle

- **Costs less than 2 cents per mile to operate.**
- Recharges from any 120V AC Household electric current, just plug it in !
- **Recharges in 2 hours to 4 hours.**
- 20 to 30 mile range per charge
- **Totally "*Green*" NO Emissions = NO Pollution !**

Saves over $1,000 annually on operating costs, when compared to Gasoline fueled economy car.



Manufacturer's Suggested Retail Price (MSRP) for 2008 Model Year ***OKA ZEV NEV*** starts at:

$6,995 for the Base model.

www.okaauto.com **1-888-OKA-AUTO** *E-Mail:* **okaauto@aol.com**

What's the MPG ?

Some people think, this is a trick question, when asking that about an electric powered vehicle, such as **OKA NEV ZEV**, but there is an answer !

This is based on: *"equivalent fuel economy"*

• **OKA NEV ZEV** uses between 200 and 220 watt-hour of electric energy from the standard 110V AC wall outlet for each mile driven on a typical "neighborhood driving cycle", or about 210 W-h on average.

• Gasoline contains 33,700 watt-hour of energy per one US gallon.

• Therefore, an internal combustion engine powered vehicle would have to have a fuel economy of 33,700 watt-hours/gallon divided by 210 watt-hour/mile = **160 mpg** to have the same energy efficiency as a **OKA NEV ZEV**

So the answer is 160 MPG !!!

What's the Cost per Mile ?

OKA NEV ZEV is powered by Electric Motor which uses electric energy that is stored in rechargeable batteries.

The power that is needed to drive **OKA NEV ZEV** for one mile is typically about 220 Watt-hour. This energy calculation includes the losses incurred in battery charging.

Electric Energy is measured by your local utility in kWh = Kilo-Watt-hour, which is 1,000 Watt-hours.

Typical cost of kWh in USA ranges from 5 cents to 12 cents. 8 cents is currently the National Average, but in most Major cities the average is 10 cents per kWh.

The current cost of Electric Power from DWP in Los Angeles is 9.09 cents per kWh.

If the 1,000 Watt-hour costs you 9.09 cents and **OKA NEV ZEV** uses 220 Watt-hour per mile then the cost per mile is (9.09/1,000*220) =

2 cents per mile

How much money can you save ?

If you use **OKA NEV ZEV** for all your local Neighborhood driving, then you will not only save on fuel costs but also on reduced maintenance for your "other" gasoline or diesel powered vehicle.

Of course the more you drive the more you will save, but also consider this:

The longer you wait at traffic lights or in stop-and-go traffic, the more fuel you use in a gasoline or diesel powered vehicle !

When the vehicle is standing still with engine running it is getting ZERO MPG !!!

The more dense the traffic conditions are, and the slower the actual traffic flow is, the lower the resulting MPG will be.

Typical actual average speed of traffic flow in most cities is only 17.3 MPH !!!

Most gasoline fueled vehicles deliver the greatest fuel economy at steady 45 MPH !

At higher speeds the wind resistance or coefficient of drag becomes significant thus lower MPG is the result - you will use far more fuel to drive the same distance at 70 MPH than at 45 MPH.

However you will also use much more fuel to drive the same distance in slow moving stop-and-go traffic than at steady 45 MPH.

At slower speeds the pumping losses and heat losses of the engine reduce the fuel economy - and remember at **ZERO MPH** you get **ZERO MPG** !!!

By contrast Electric powered vehicle like **OKA NEV ZEV** uses energy ONLY when it is driven, it does not use any traction energy when it is standing still at traffic light waiting for green.

Most vehicles that are replaced by **OKA NEV ZEV** for local driving only average less than 20 MPG in such service, this translates to cost per mile in range of 12 to 19 cents per mile.

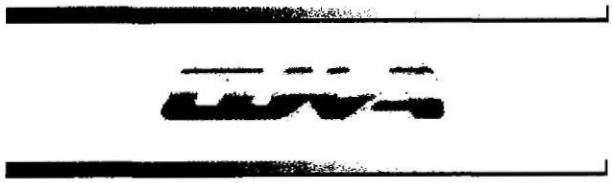
As we have calculated above the cost of driving **OKA NEV ZEV** is about 2 cents per mile,

so on the average if all your local driving needs are satisfied with **OKA NEV ZEV** then you can save about $500 to $600 annually.

When other maintenance and tear and wear cost are included (such as tires, brakes, oil and filter changes) then when compared to the very low wear rates and low cost of spare parts for **OKA NEV ZEV** you will easily save another $400 to $600 annually.

When all expenses for your current vehicle are compared, **OKA NEV ZEV** will on the average generate -

Saving of about $1,000 per year !



June 27, 2006

Public Sees Big Gains from High Mileage Cars, but does not Expect them on the Market Soon

To: The X PRIZE Foundation
From: Jeremy Rosner

Despite a belief that high-mileage cars would bring major benefits, most Americans doubt such cars will be available soon, according to a new survey.[1] Only 13 percent believe carmakers will be selling 100 mile-per-gallon cars in the U.S. within the next five years; only 37 percent believe this will happen within the next 10 years. On average, the public believes it will take over 25 years to reach this goal.[2]

The public believes the main obstacle to the availability of such cars is that automakers and oil companies are blocking the technology from coming to market; over half the public, 52 percent, picks this as one of two main reasons. The next most selected reason – consumers don't care enough about high-mileage cars to buy them – lags far behind, selected by only 30 percent.

Even though the public doubts 100 mpg cars will reach the U.S. market any time soon, an overwhelming 81 percent say it would be extremely or very important if some project could make this happen in the next five years. Nearly half the public, 46 percent, say it would be "extremely" important. The main benefit the public would expect from such high-mileage cars is reduced U.S. dependence on foreign oil, cited by 65 percent of all respondents as one of two main benefits. They see reduced driving costs as the next most important benefit (39 percent). They are less inclined to focus on such benefits as reduced air pollution (27 percent), combating global warming (24 percent), helping to revive the auto industry and its jobs (15 percent), or cutting oil company profits (14 percent).

There are some significant differences across types of respondents. For example, Democrats are twice as likely as Republicans to say that a key benefit of high-mileage cars would be a reduction in global warming, picked by 31 percent of Democrats but just 15 percent of Republicans. Motorists who drive the most are more likely to believe it will take longer for automakers to offer high-mileage cars. Younger people are most likely to cite reduced driving costs as a benefit of such cars.

But what is more remarkable is that the major findings from this survey cut across virtually every political and demographic sub-group. Not a single major partisan or demographic sub-group believes 100 mpg cars will be available in less than 20 years. Every major sub-group believes the main obstacle is auto and oil companies blocking the technology. A super-majority of every major sub-group believes it would be extremely or very important to have high-mileage cars available in the next five years. And every major sub-group believes the main benefit would be less dependence on foreign oil. Thus, there is a strong consensus that there would be great benefits to bringing 100 mpg cars to market in the near future, but also that – under current conditions – this is unlikely to happen.

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[1] The findings are based on a series of questions added to an omnibus survey, based on telephone interviews with 1,000 registered voters, conducted June 4-7, 2006. The results are subject to a margin of sampling error of +/- 3.1 percent.

[2] On average, respondents believe it will be 26.8 years before major car manufacturers produce and sell 100 mpg cars in the U.S.; excluding outlier responses of over 100 years, the average is 25.2 years.

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GREENBERG QUINLAN ROSNER RESEARCH

AUTOMOTIVE X PRIZE
Frequency Questionnaire

June 4-7, 2006
***1000* Registered Voters**

How many years from now would you estimate it will be before the major car manufacturers are producing and selling cars here in the U.S. that get 100 miles per gallon?

	% Total
0-10	37
11-20	21
21-30	10
31-40	2
41-50	9
More than 50	7
(Don't know/Refused)	14
Mean	**26.8**
Outlier-adjusted Mean (Maximum capped at 100)	**25.2**

(ref:XPRIZE1)

Based on what you know, which TWO of the following best describes why car companies aren't making faster progress toward cars that get much higher gas mileage:

	% Total
The technology exists, but is being blocked by oil companies or car companies.	52
Consumers don't really care enough about high mileage to buy such cars	30
Auto companies feel that size and speed sell more cars than high mileage.	29
Government regulations on safety and emissions are blocking progress on gas mileage	20
Government fuel efficiency regulations are too lenient	19
The technology for much higher mileage just doesn't exist yet.	17
(Other)	2
(Don't know/refused)	5

(ref:XPRIZE2)

Now imagine there was a project that led to cars being manufactured and sold in the US within the next 5 years that got 100 miles per gallon. How important would you say that would be for the United States - extremely important, very important, somewhat important, just a little important, or not very important for the United States?

	% Total
Extremely important	46
Very important	35
Somewhat important	14
Just a little important	2
Not that important	3
(Don't know / refused)	1
Total extremely/very important	**81**
Total somewhat/a little/not that important	**18**

(ref:XPRIZE3)

Imagine there was a project that led to cars being manufactured with much higher fuel efficiency, say 100 miles per gallon. Which TWO of the following would be the greatest benefit of that project?

	% Total
Reduce US dependence on foreign oil	65
Reduce driving costs for consumers	39
Reduce air pollution	27
Help combat global warming	24
Help revive business and jobs in the auto industry	15
Reduce profits for the oil companies	14
(Other: record verbatim)	0
(Don't know/refused)	3

(ref:XPRIZE4)

Finally, I would like to ask you a few questions for statistical purposes. What is the last year of schooling that you have completed?

	% Total
1 - 11th grade	4
High School graduate	25
Non-college post H.S.	3
Some college	28
College graduate	25
Post-graduate school	14
(Don't know/refused)	1

(ref:EDUC)

Are you a member of a labor union?

	% Total
Yes: Respondent belongs	15
Household member	6
No member belongs	78
(Don't know/refused)	1
Union Household	**21**
Non College Non Union	**45**
Non union worker	**31**

(ref:UNION)

Are you married, single, separated, divorced, or widowed?

	% Total
Married	65
Single	16
Separated/Divorced	10
Widowed	8
(Don't know/refused)	1
Sep/Div/Wid	**18**

(ref:MARITAL)

Are you a licensed driver?

	% Total
Yes	96
No	3
(Don't Know/Refused)	1

(ref:DRIVERS)

[IF LICENSED DRIVER] How many miles do you drive on average each week?
[965 Respondents]

	% Total
0-50	21
51-100	25
101-150	11
151-200	18
More than 200	27
(Don't Know/Refused)	5
Mean	**211**
Outlier-adjusted Mean (Maximum capped at 1500)	**201**

(ref:DRIVERS2)

Generally speaking, do you think of yourself as a Democrat, a Republican or what?

	% Total
Strong Democrat	24
Weak Democrat	15
Independent-lean Democrat	9
Independent	7
Independent-lean Republican	8
Weak Republican	14
Strong Republican	21
(Don't know/Refused)	2

(ref:PTYID1)

Thinking in political terms, would you say that you are Conservative, Moderate, or Liberal?

	% Total
Liberal	19
Moderate	40
Conservative	38
(Don't know/refused)	3

(ref:IDEO1)

Last year, that is in 2005, what was your total family income from all sources, before taxes? Just stop me when I get to the right category.

	% Total
Less than $10K	4
$10K to under $20K	6
$20K to under $30K	11
$30K to under $50K	17
$50K to under $75K	19
$75K to under $100K	13
$100K or more	15
(Refused)	13
(Don't know)	2

(ref:INCOME)

In what year were you born?

	% Total
18 - 24	4
25 - 29	7
30 - 34	10
35 - 39	7
40 - 44	8
45 - 49	13
50 - 54	11
55 - 59	10
60 - 64	7
Over 64	21
(No answer)	2

(ref:AGE)

Record respondent's gender

	% Total
Male	48
Female	52

(ref:GENDER)

August 1, 2007

Americans See 100 mpg Cars as Biggest Fix for Global Warming, Have High Interest in Purchasing, but also Sensitivity about Costs

To: Don Foley and the Automotive X Prize (AXP) Team
From: Jeremy Rosner and Kristi Fuksa

Our new survey[1] shows that Americans see the development of 100 mile-per-gallon cars as one of the most powerful ideas for combating global warming and reducing U.S. dependence on foreign oil. Furthermore, nearly two thirds of Americans say they would be highly interested in buying such cars. Yet Americans also show strong sensitivity to cost issues regarding these ultra-fuel-efficient cars – viewing their potential high cost as a major drawback, but also viewing the cost savings on gasoline as their biggest advantage. All this underscores the need for AXP competitors to achieve fuel efficiency within the context of affordability, and for both the Foundation and the competitors to stress the cost savings of fuel efficiency along with the benefits for the environment and American energy concerns.

Americans see 100 mpg cars as the single most powerful idea, of six tested, for combating climate change and global warming. In all, 22 percent pick the development of 100 mpg cars as one of the top two ideas for achieving this goal; the next strongest idea, providing tax credits for using solar and wind power, earns 20 percent. Developing 100 mpg cars is also one of the two strongest ideas, of seven tested, for reducing U.S. dependence on foreign oil and gas; 18 percent select it as one of their top two ideas for achieving this goal, with 21 percent selecting "requiring 25 percent of car fuel to come from renewable energy sources like ethanol." Younger voters are most likely to see 100 mpg cars as solutions to these problems.

The survey also shows strong consumer interest in purchasing 100 mpg cars. Nearly two thirds of all Americans, 62 percent, are "extremely" or "very" interested in buying one sometime soon (over half of these, 34 percent, are "extremely" interested). Interest is strongest among upper income Americans (73 percent extremely/very interested among those over $75,000 household income), among men under 50 years of age, (71 percent), and among people who drive more than 200 miles a week (69 percent). This high level of interest partly reflects the fact that Americans see the development of such cars as an important national project; 77 percent say it would be "extremely" or "very" important to have a project that

[1] The findings are based on a series of questions added to a nation wide survey, based on telephone interviews with 1,000 likely voters, conducted July 25-29, 2007. The results are subject to a margin of sampling error of +/- 3.1 percent.

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would lead to such cars being manufactured and sold in the U.S. in the next five years, nearly the same as when we asked this in June 2006 (81 percent).

Although there is strong consumer interest in buying 100 mpg cars, there is a real concern about high costs. Almost half of all respondents, 43 percent, say their biggest doubt about buying such a car (among five tested) is that "it would probably cost too much." Although 62 percent initially indicate they would be interested in buying a 100 mpg car, the response is 17 points lower if respondents are told the car would cost an additional $5,000. The drop-off is even larger among men (a 22 point drop, from 69 to 47 percent); 18-29 year olds (down 26 points, from 71 to 45 percent); and, not surprisingly, among the lowest income respondents (down 27 points, from 59 to 32 percent, for those with incomes under $30,000).

The American consumer's cost sensitivity can also be a strong positive for 100 mpg cars, however. The strongest selling point for such cars, among five tested, is that it would save money on gas. Fully a third of all respondents (33 percent) pick this as the strongest advantage, followed by reducing pollution and global warming, and reducing U.S. energy dependence (each picked by 29 percent). That said, there is a real gender divide here: men see the primary benefit in saving the gas costs (38 percent), while women believe that the biggest reason to buy a 100 mpg car is reducing pollution and global warming (35 percent).

These results suggest that as the competition goes forward, it will be important for competitors to develop their cars with an eye toward consumer affordability as well as fuel efficiency, and this is something the AXP team may want to stress in its communications to competitors. It also means that both the AXP team and the individual competitors will want to place significant emphasis in their public communications on the cost savings associated with super-fuel-efficient cars, as well as the benefits for the environment and American energy consumption. The AXP team may specifically want to look at ways to reassure the public that the price of these innovative cars is likely to decline in real terms over time – perhaps looking at the cost curves for other revolutionary innovations in the past.

Greenberg Quinlan Rosner Research
National Survey Results
Automotive X Prize July 25-29, 2007

Q.1 (SPLIT A) Now I am going to read you a list of possible actions; please tell me which TWO would do the most to help combat climate change and global warming.

	Total
Developing cars that get 100 miles per gallon	22
Providing tax credits to consumers for using solar and wind power	20
Increasing the tax credit for buying hybrid cars	15
Capping carbon emissions from power plants	13
Building more nuclear instead of coal power plants	13
Increasing funding and incentives for car pooling and mass transit	10
(Don't know/refused)	6

Q.2 (SPLIT B) Now I am going to read you a list of possible actions; please tell me which TWO would do the most to reduce America's dependence on foreign oil and gas.

	Total
Requiring 25 percent of car fuel to come from renewable energy sources like ethanol	21
Developing cars that get 100 miles per gallon	18
Providing tax credits to consumers for using solar and wind power	16
Increasing incentives for more oil and gas exploration in the US	11
Increasing the tax credit for buying hybrid cars	10
Building more nuclear power plants	9
Increasing funding and incentives for car pooling and mass transit	9
(Don't know/refused)	5

Q.3 Now imagine there was a project that led to cars being manufactured and sold in the US within the next 5 years that got 100 miles per gallon. How important would you say that would be for the United States - extremely important, very important, somewhat important, just a little important, or not very important for the United States?

	Total
Extremely important	41
Very important	35
Somewhat important	15
Just a little important	3
Not important at all	4
(Don't know / refused)	1
Total extremely/very important	**77**
Total somewhat/little/not important	**22**

Q.4 (SPLIT A) Now imagine auto makers started selling cars that got 100 miles per gallon. How interested would you be in purchasing such a car sometime soon? Would you be -

	Total
Extremely interested	34
Very interested	29
Somewhat interested	22
Just a little interested	6
Not interested at all	7
(Don't know/refused)	3
Total extremely/very interested	**62**
Total somewhat/little/not interested	**35**

Q.5 (SPLIT B) Now imagine auto makers started selling cars that got 100 miles per gallon, but they cost about five thousand dollars more than other cars. How interested would you be in purchasing such a car sometime soon? Would you be -

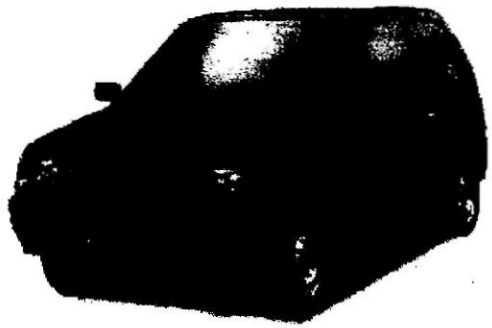
	Total
Extremely interested	20
Very interested	25
Somewhat interested	29
Just a little interested	9
Not interested at all	16
(Don't know/refused)	0
Total extremely/very interested	**45**
Total somewhat/little/not interested	**54**

Q.6 (ONLY FOR THOSE WHO SAY EXTREMELY, VERY, SOMEWHAT, OR LITTLE INTEREST) Assuming auto makers started selling cars that get 100 miles per gallon, which ONE of the following would be the biggest reason you might be interested in buying such a car?

	Total
Save money on gas	33
Help reduce pollution and global warming	29
Help reduce U.S. energy dependence	29
Help reduce excessive oil company profits	7
Exciting to own a cutting-edge car	1
(Don't know/refused)	1

Q.7 Assuming auto makers started selling cars that get 100 miles per gallon, which ONE of the following would be your biggest doubt about buying such a car?

	Total
It would probably cost too much	43
It would probably not really get 100 miles per gallon	19
It would probably have high repair costs	16
It would probably be less safe	12
It would probably be less attractive	4
(Don't know/refused)	6



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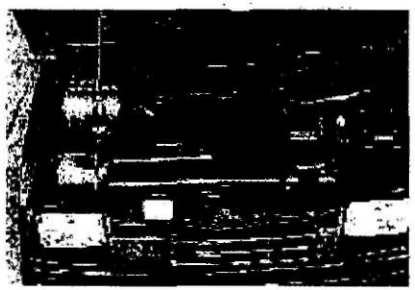


Performance:

Maximum constant speed: 25 MPH
Range per full charge: 20 to 30 miles
Acceleration: 0 to 20 MPH: 6 s
Average Power Consumption: 200 Wh/mile

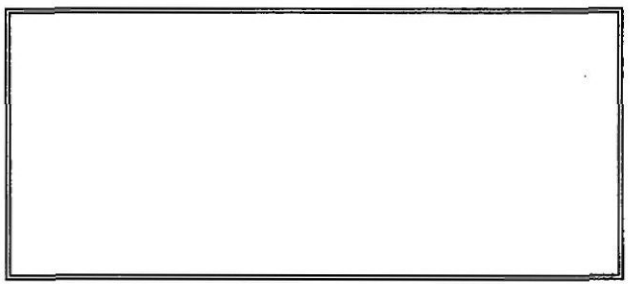
OKA

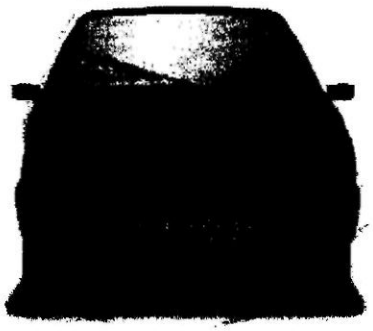
U.S. Manufacturer's Representative:

MIROX Corporation
5015 W. Sahara Ave.
#125-130
Las Vegas, NV 89146
USA

888-OKA-AUTO
702-683-8292
okaauto@aol.com
www.okaauto.com

Your Local Authorized OKA Dealer:





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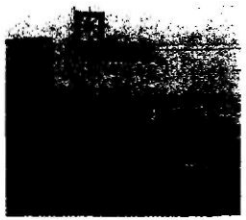
NEV

Neighborhood Electric Vehicle

ZEV

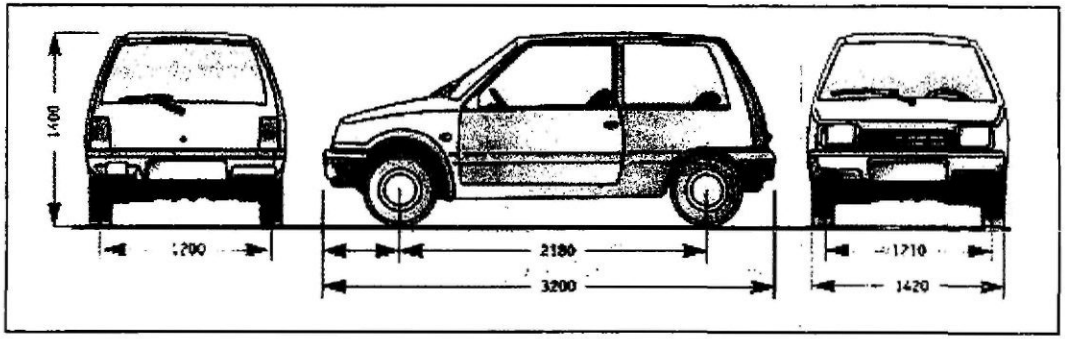
Zero Emission Vehicle



OKA

Body Dimensions:

Height:	1400 mm	55"
Width:	1420 mm	56"
Length:	3200 mm	10.5'
Wheel Base:		86"
Track:	1200 mm	47¼"
Tires:	135/80 R12	
Road Clearance:		6.7"



Weights:

Empty Vehicle:	685 kg	1507 Lb.
Max Cargo:	300 kg	660 Lb.
GVWR:	985 kg	2167 Lb.

Power System:

Front mounted DC Series Electric Motor
Traction Batteries: 2*4 @ 12Vea. = 48V
Aux. Battery: 12V 36 Ah DIN 175A
Power: 5 Hp @ 3,600 RPM
Torque: 50 Nm @ 1,200 RPM

Standard Equipment:

Analog Speedometer
Analog Volt & Amp Meters
Rear Glass Defroster
Rear Wiper & Washer
Emergency 4-way flasher

Optional Equipment:

Additional Traction Battery Packs
On-Board Fast Charger
Motor Run Hour Meter
Aux. Battery Re-charger
Analog Tachometer
Analog Clock
Digital Clock
Sound Systems
Aluminum Alloy Wheels 12"
Tires 155/80R12
Aluminum Alloy Wheels 13"
Tires 145/70R13
Tires 155/70R13
Spare Wheel & Tire
Tool Kit (Tire Wrench, Jack, Screwdriver)

Prices:

Manufacturer's Suggested Retail Price (MSRP) for 2008 Model Year ***OKA NEV ZEV*** start at:

$7,995 for the Base model.
$8,945 for the Standard model.
$9,995 for the Luxury model.

OKA

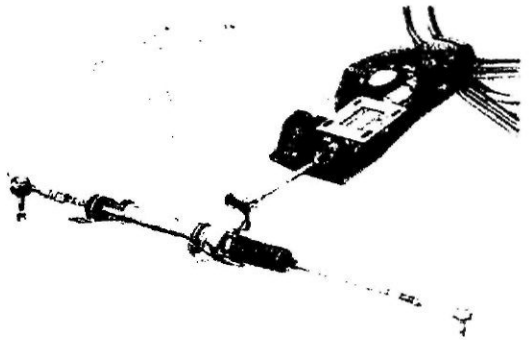
Body:

Two-door mini sedan with rear hatch
Front & Rear energy absorbing bumpers
Front Bucket seats
Rear Bench seat
Rear Cargo Cover
Optional Glass Pop-up removable Sunroof
Optional remote control Door Locks
Optional Power Windows

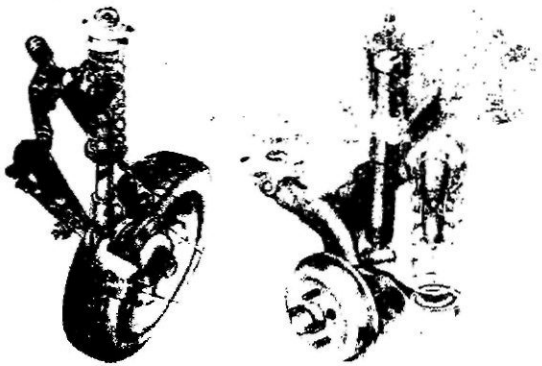
Transmission:

Single speed with Electronic Reverse
Electronic Speed Limiter
Conventional Differential
Front wheel drive.

Steering: Rack & Pinion



Suspension & Brakes:



Front (Disk) **Rear (Drum)**
Parking Brake acts on Rear Wheels only.